Overview of ATLAS Distributed Computing Monitoring

Outline

- Importance of monitoring
- ATLAS distributed computing monitoring
- Data transfer overview
  - Distributed Data Management (DDM)
  - DDM Monitoring
  - ATLAS Data Replication Monitoring
  - Data Replication between sites
  - DDM Functional Tests
- Production & Analysis Job Monitoring
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  - Job Summary
  - Analysis Job Monitoring
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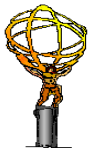
- Site Monitoring
  - Site Status Board
  - AGIS - ATLAS Grid Downtime Calendar
- Central Services Monitoring
  - ADC DDM VOBOXES
  - Storage Space Monitor
  - LCG File Catalog
- Conclusions



Importance of monitoring

- Powerful and flexible monitoring systems are required in order to maintain and improve a highly distributed system.
- It's required for users (ATLAS physicists), shifters, experts, site admins, managers.

- Monitoring computing activities are essential in order to
  - ❑ commission sites and services
  - ❑ estimate the quality of the infrastructure
  - ❑ identify inefficiencies and failures
  - ❑ predict future requirements
  - [ ] document resource consumption

ATLAS Distributed Computing Monitoring (1)

This project serves as an umbrella for all software systems used by ATLAS DC.

Activities:

- sites and services availability
- coordinates the monitoring of services for Monte Carlo Production
- data (re)processing
- physics groups and individual users jobs
- data export from CERN and data replication between sites

Covers various needs:

- analysis users
- VO managers
- site admins
- production managers
- sites and services commissioning teams
- shifters
- experts

ATLAS Distributed Computing Monitoring (2)

- Web tools provide real time and historical views for most part of activities in the scope of ATLAS.

  - developed using different sets of backend and frontend technologies

Main components of the monitoring applications :

- data collectors
- data repositories
- user interfaces and APIs for data retrieval

Data transfer overview
Distributed Data Management (DDM)

- The core system consists of a **bookkeeping system** (dataset-based) and a **site services** to handle data transfers

- Dataset is a primary unit of data organization and replication:
  - logical entity with the unique name
    - e.g, data10_7TeV.00152508.physics_MuonswBeam.merge.ESD.r1297_p161_tid143553_00
  - versioned collection of GRID files (physical entities)

Dataset subscribed to sites
- Triggers transfer of all files to the site's storage system (SE)

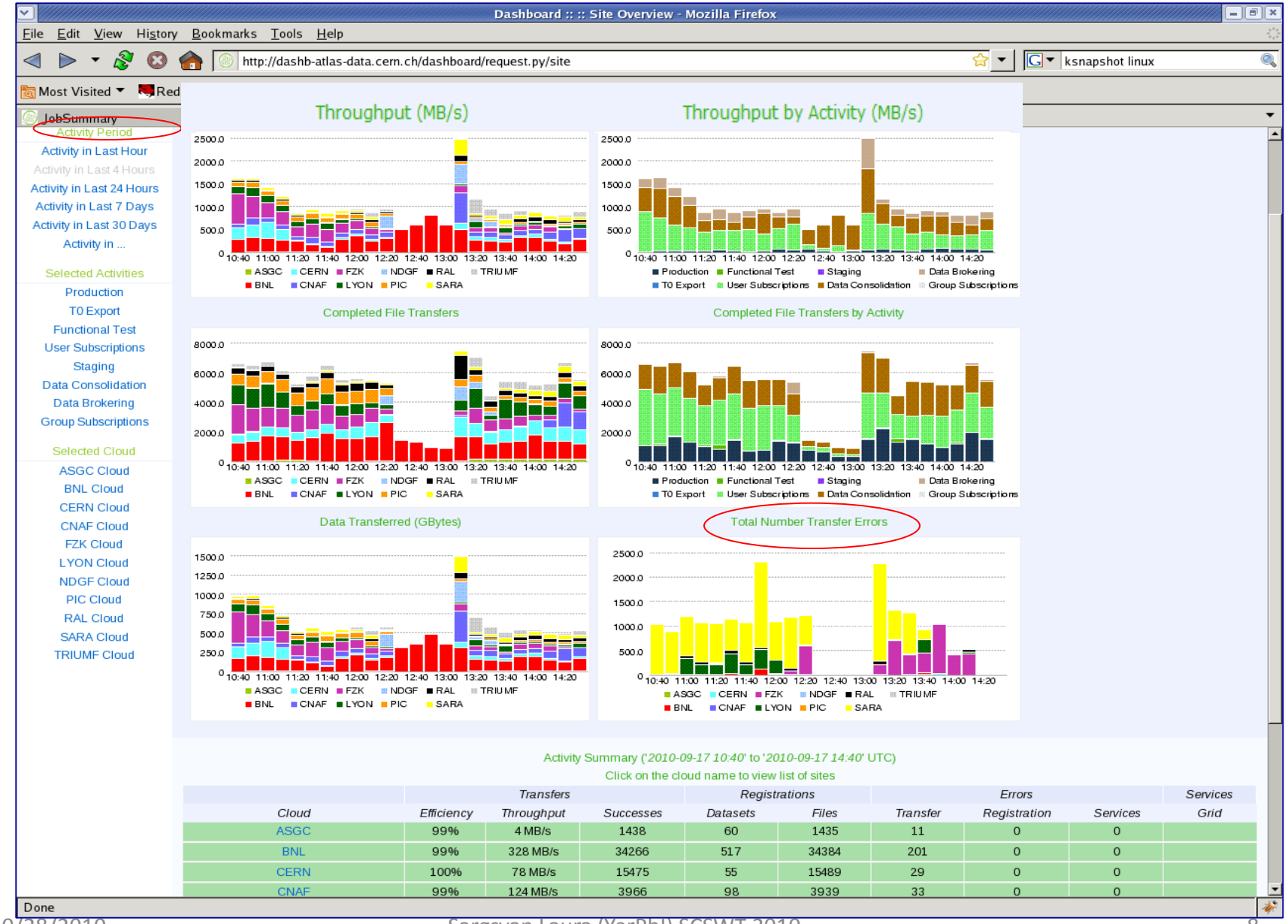
- Central catalog tracks dataset content and sites' dataset content

- Higher level policy engines inject subscriptions into the system according to the ATLAS Computing Model

DDM Monitoring

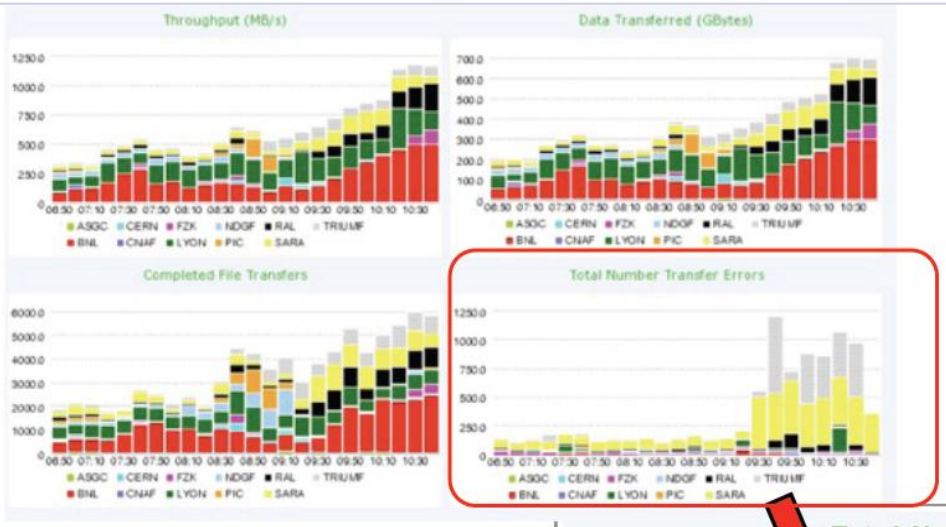
- Monitors transfers and finds failures
- Primary tool for quick analysis and Functional tests status
- Plays a central role in ATLAS computing operations
  - used by the shifters 24/7.
  - serves more than 1000 unique visitors per month
  - up to 25k pages are viewed daily.

DDM - dashboard



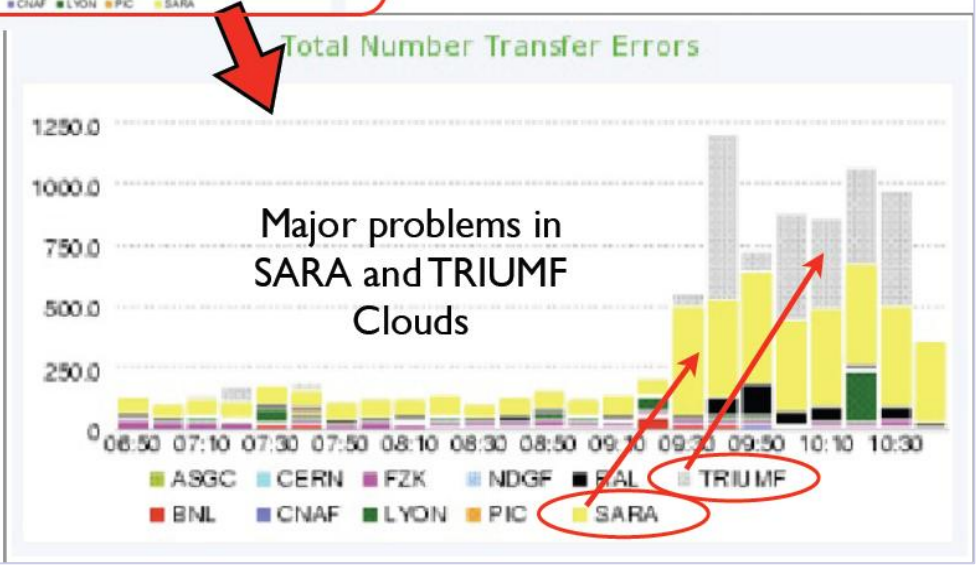
	Transfers			Registrations		Errors			Services
Cloud	Efficiency	Throughput	Successes	Datasets	Files	Transfer	Registration	Services	Grid
ASGC	99%	4 MB/s	1438	60	1435	11	0	0	
BNL	99%	328 MB/s	34266	517	34384	201	0	0	
CERN	100%	78 MB/s	15475	55	15489	29	0	0	
CNAF	99%	124 MB/s	3966	98	3939	33	0	0	

DDM errors - how to spot a problem (1)



Look at the Error plot

Look at the color code



DDM errors - how to spot a problem (2)

Opening a cloud to see per-destination information

	SARA	73%	66 MB/s	11565	928	10816	4362	0	0	
	Click on the site name to go to the site page, '+' to see statistics for this site per source									
+	CSTCDIE_DATADISK	100%	2 MB/s	704	40	704	0	0	0	ok
+	CSTCDIE_HOTDISK	0%	0 kB/s	0	0	0	0	0	0	ok
+	CSTCDIE_MCDISK	0%	0 kB/s	0	0	0	0	0	0	ok
+	CSTCDIE_PRODDISK	100%	41 kB/s	8	6	8	0	0	0	ok
+	CSTCDIE_SCRATCHDISK	0%								
+	CSTCDIE_SOFT-TEST	0%								
+	CSTCDIE_USERDISK	0%								
-	IL-TAU-HEP_DATADISK	0%	0 kB/s	0	0	0	1576	0	0	down
	FTS State [Failed] FTS Retries [1] Reason [DESTINATION error during TRANSFER_PREPARATION phase: [CONNEC TI _ERROR] failed to contact on remote SRM [httpg://tau-se.hep.tau.ac.il:8444/srm/managerv2]. Givin' up afte r 3 tries]									1576
	NIKHEF-ELPROD_DATADISK	0%	0 kB/s	0			1404			
	SARA-MATRIX_DATADISK	0%	0 kB/s	0			172			
+	IL-TAU-HEP_HOTDISK	0%	0 kB/s	0	0	0	0	0	0	down
+	IL-TAU-HEP_MCDISK	0%	0 kB/s	0	0	0	0	0	0	down
+	IL-TAU-HEP_PRODDISK	0%	0 kB/s	0	0	0	782	0	0	down
+	IL-TAU-HEP_SCRATCHDISK	0%	0 kB/s	0	0	0	0	0	0	down
+	IL-TAU-HEP_SOFT-TEST	0%	0 kB/s	0	0	0	0	0	0	down
+	ITEP_DATADISK	100%	1 kB/s	4	4	4	0	0	0	ok

1. Look for non-green lines with bad percentage and many errors

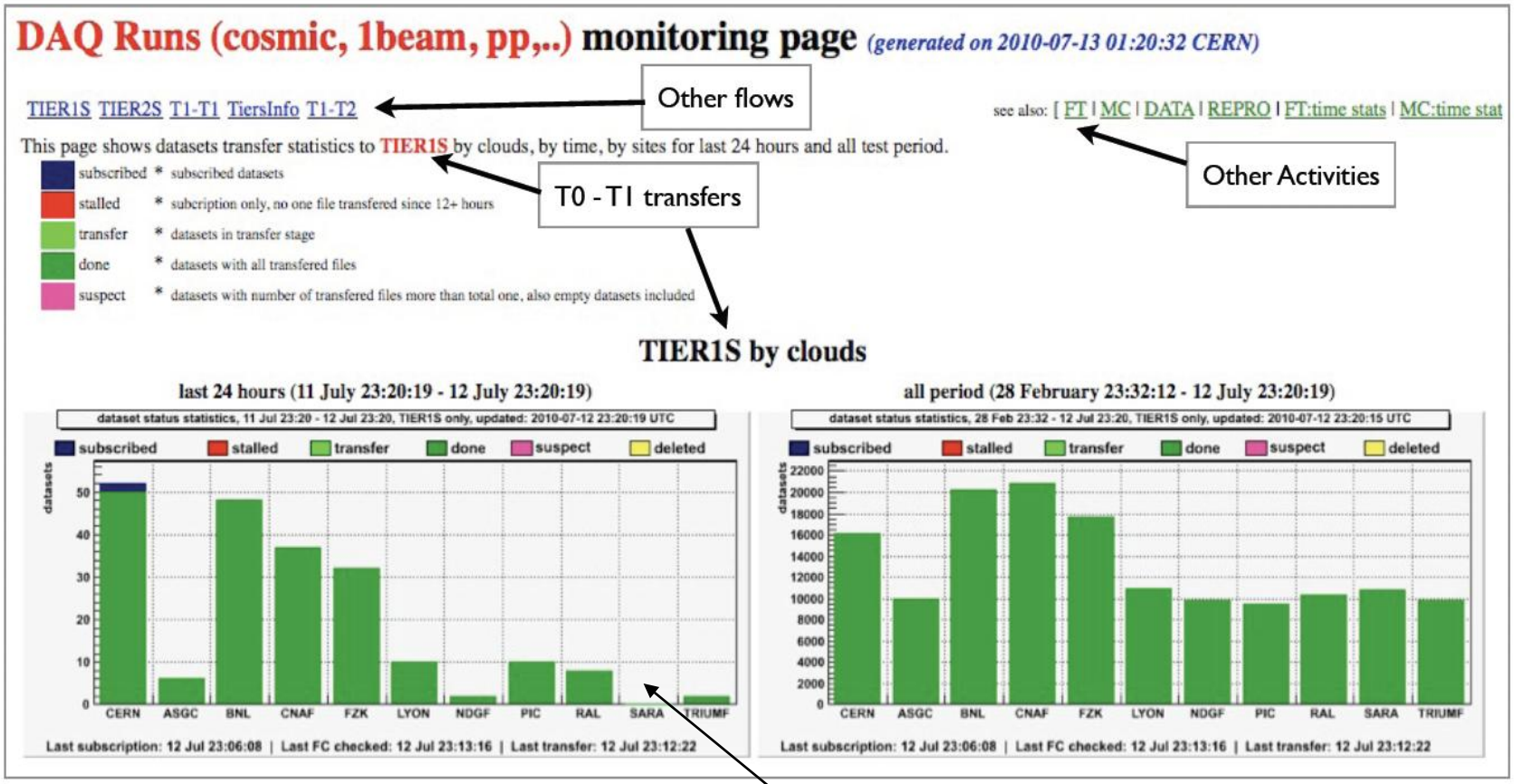
2

3

2. Click on the plus sign in front of the site name to see the break down by the source sites

3. Click on the error number to see the error messages

ATLAS Data Replication Monitoring

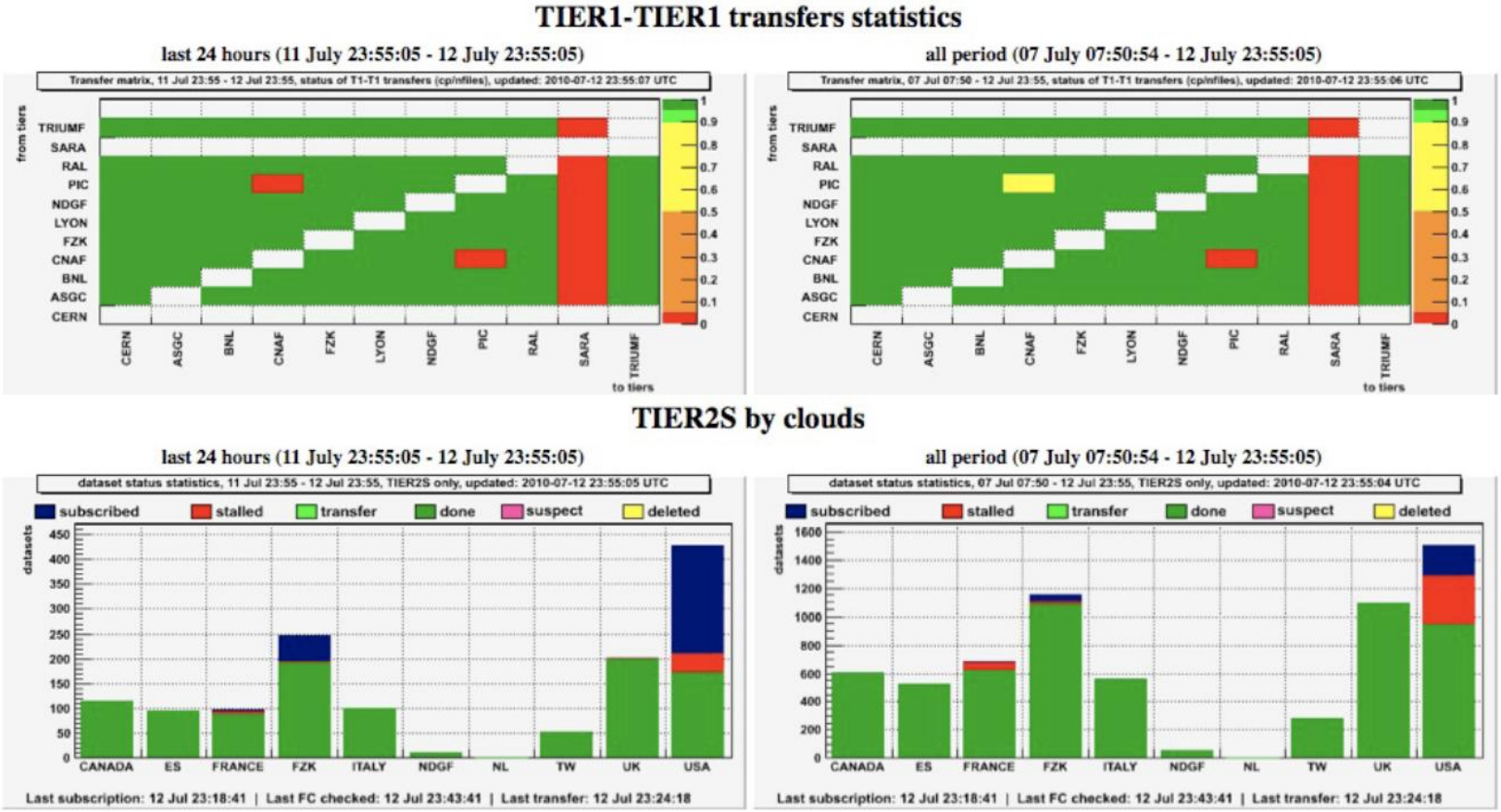


These plots look OK, but SARA cloud gets no data...

- Transfer failures are clearly errors, but sometimes no transfers also indicates some problem

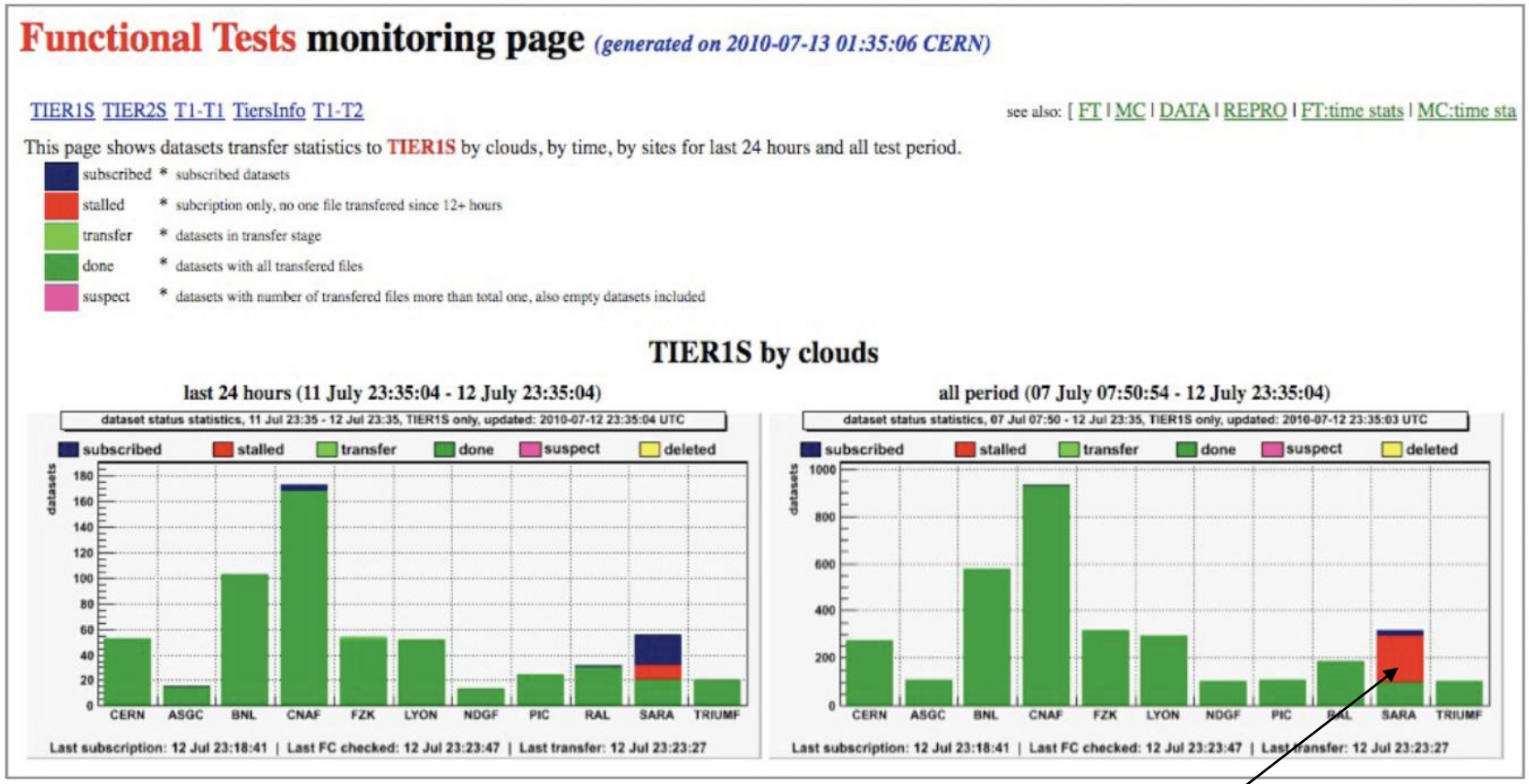
Data Replication between sites

- datasets transfer statistics to T1- T1 by clouds, by time and all test period;
- datasets transfer statistics to TIER2S by clouds for last 24 hours and all test period



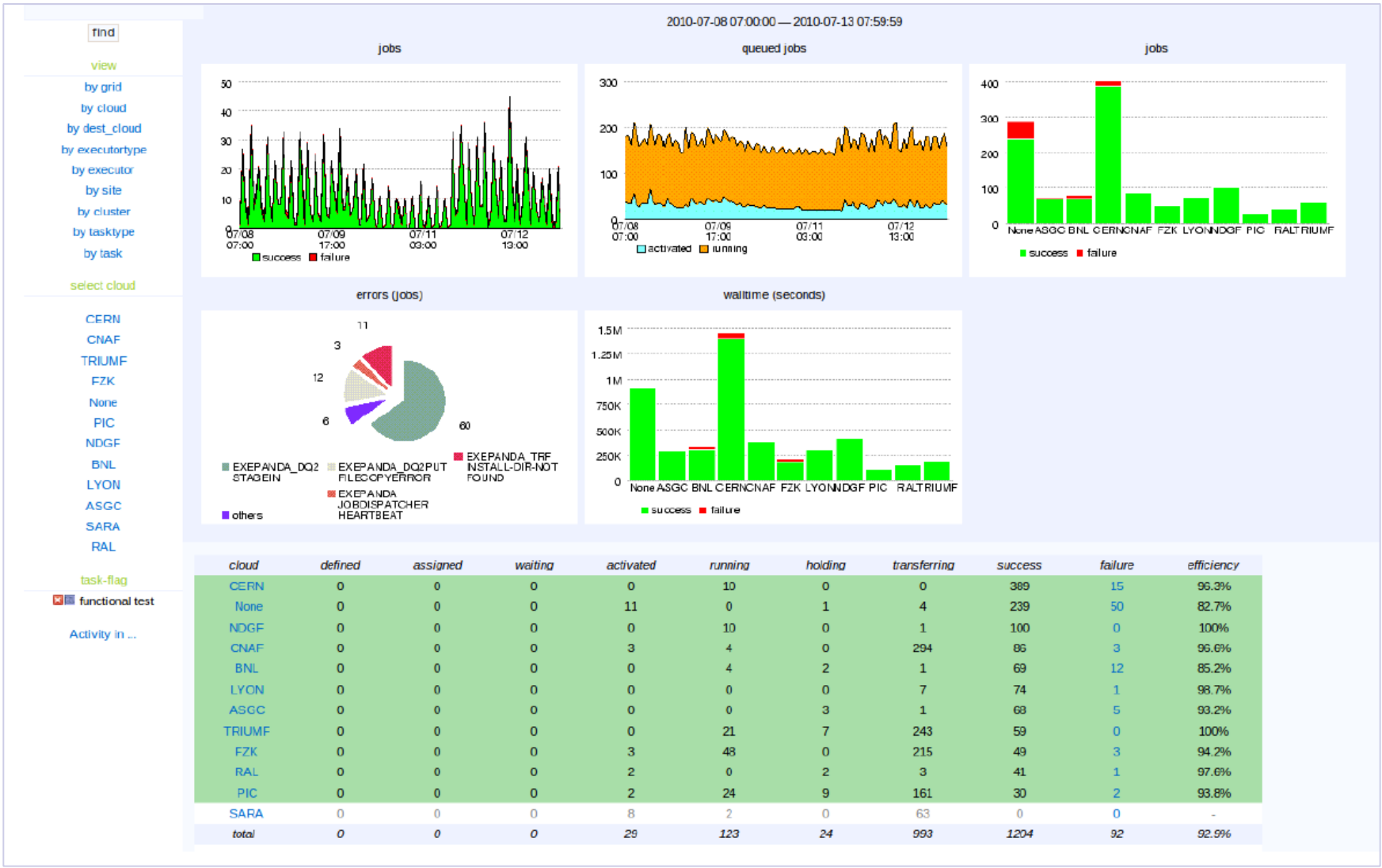
DDM Functional Tests

- continuous export of test data to verify the health of the data management system and the sites



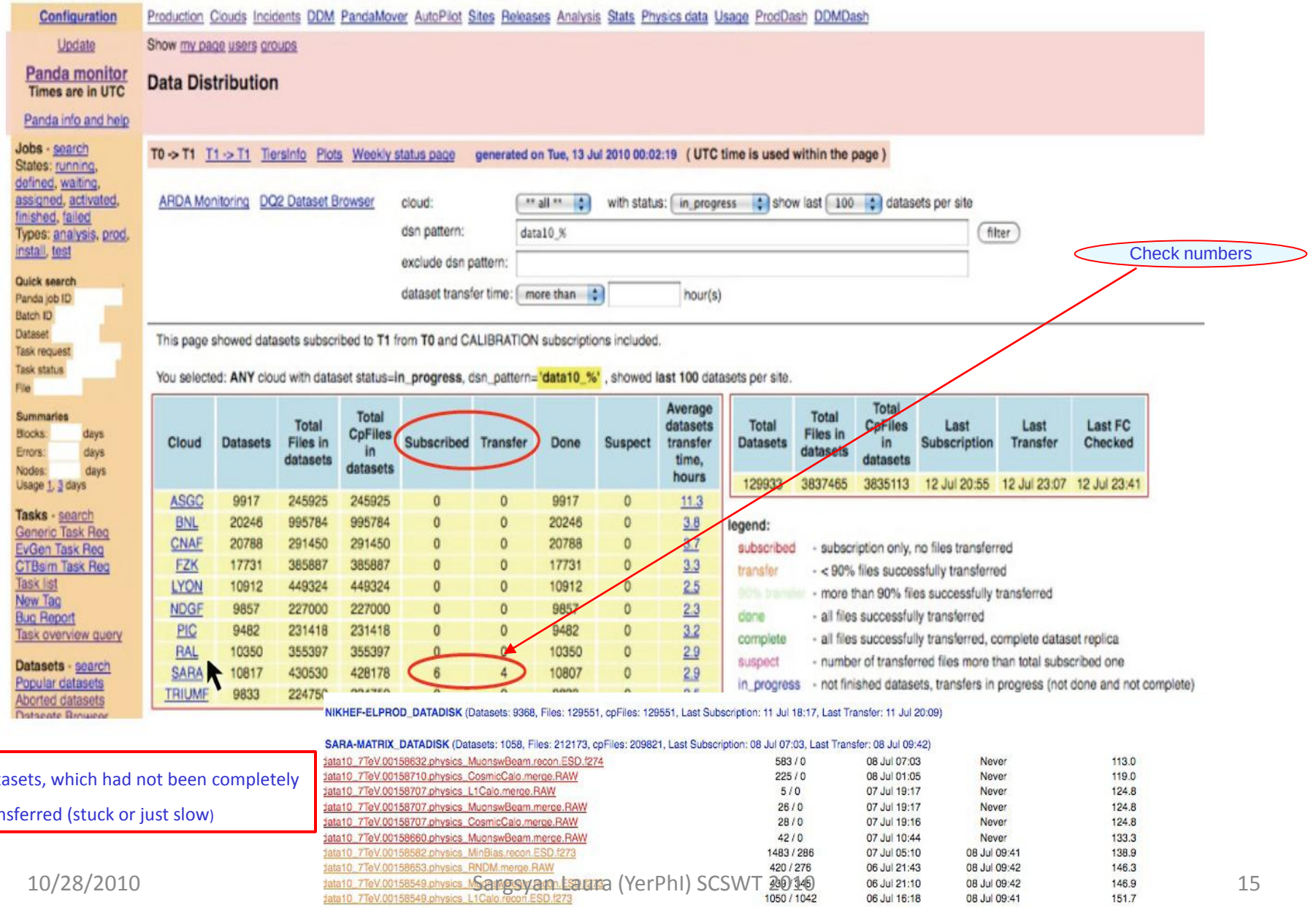
Problem with SARA

Dashboard overview of the Production Functional Tests



cloud	defined	assigned	waiting	activated	running	holding	transferring	success	failure	efficiency
CERN	0	0	0	0	10	0	0	389	15	96.3%
None	0	0	0	11	0	1	4	239	50	82.7%
NDGF	0	0	0	0	10	0	1	100	0	100%
CNAF	0	0	0	3	4	0	294	86	3	96.6%
BNL	0	0	0	0	4	2	1	69	12	85.2%
LYON	0	0	0	0	0	0	7	74	1	98.7%
ASGC	0	0	0	0	0	3	1	68	5	93.2%
TRIUMF	0	0	0	0	21	7	243	59	0	100%
FZK	0	0	0	3	48	0	215	49	3	94.2%
RAL	0	0	0	2	0	2	3	41	1	97.6%
PIC	0	0	0	2	24	9	161	30	2	93.8%
SARA	0	0	0	8	2	0	63	0	0	-
total	*0*	*0*	*0*	*29*	*123*	*24*	*993*	*1204*	*92*	*92.9%*

Functional Test Data Distribution Table



Configuration | Production | Clouds | Incidents | DDM | PandaMover | AutoPilot | Sites | Releases | Analysis | Stats | Physics data | Usage | ProdDash | DDMDash

Update

Panda monitor
Times are in UTC

Panda info and help

Show my page users groups

Data Distribution

Jobs - search
States: running, defined, waiting, assigned, activated, finished, failed
Types: analysis, prod, install, test

Quick search
Panda job ID
Batch ID
Dataset
Task request
Task status
File

Summaries
Blocks: days
Errors: days
Nodes: days
Usage 1, 3 days

Tasks - search
Generic Task Req
EvGen Task Req
CTBsim Task Req
Task list
New Tag
Bug Report
Task overview query

Datasets - search
Popular datasets
Aborted datasets
Datasets Browser

T0 -> T1 | T1 -> T1 | TiersInfo | Plots | Weekly status page | generated on Tue, 13 Jul 2010 00:02:19 (UTC time is used within the page)

ARDA Monitoring | DQ2 Dataset Browser

cloud: ** all ** with status: in_progress show last 100 datasets per site
dsn pattern: data10_% filter
exclude dsn pattern:
dataset transfer time: more than hour(s)

This page showed datasets subscribed to T1 from T0 and CALIBRATION subscriptions included.

You selected: ANY cloud with dataset status=in_progress, dsn_pattern='data10_%' , showed last 100 datasets per site.

Cloud	Datasets	Total Files in datasets	Total CpFiles in datasets	Subscribed	Transfer	Done	Suspect	Average datasets transfer time, hours
ASGC	9917	245925	245925	0	0	9917	0	11.3
BNL	20246	995784	995784	0	0	20246	0	3.8
CNAF	20788	291450	291450	0	0	20788	0	3.7
FZK	17731	385887	385887	0	0	17731	0	3.3
LYON	10912	449324	449324	0	0	10912	0	2.5
NDGF	9857	227000	227000	0	0	9857	0	2.3
PIC	9482	231418	231418	0	0	9482	0	3.2
RAL	10350	355397	355397	0	0	10350	0	2.9
SARA	10817	430530	428178	6	4	10807	0	2.9
TRIUMF	9833	224750						

Total Datasets	Total Files in datasets	Total CpFiles in datasets	Last Subscription	Last Transfer	Last FC Checked
129933	3837465	3835113	12 Jul 20:55	12 Jul 23:07	12 Jul 23:41

legend:
subscribed - subscription only, no files transferred
transfer - < 90% files successfully transferred
- more than 90% files successfully transferred
done - all files successfully transferred
complete - all files successfully transferred, complete dataset replica
suspect - number of transferred files more than total subscribed one
in_progress - not finished datasets, transfers in progress (not done and not complete)

NIKHEF-ELPROD_DATADISK (Datasets: 9368, Files: 129551, cpFiles: 129551, Last Subscription: 11 Jul 18:17, Last Transfer: 11 Jul 20:09)

SARA-MATRIX_DATADISK (Datasets: 1058, Files: 212173, cpFiles: 209821, Last Subscription: 08 Jul 07:03, Last Transfer: 08 Jul 09:42)

data10_7TeV.00158632.physics_MuonswBeam.recon.ESD.f274	583 / 0	08 Jul 07:03	Never	113.0
data10_7TeV.00158710.physics_CosmicCalo.merge.RAW	225 / 0	08 Jul 01:05	Never	119.0
data10_7TeV.00158707.physics_L1Calo.merge.RAW	5 / 0	07 Jul 19:17	Never	124.8
data10_7TeV.00158707.physics_MuonswBeam.merge.RAW	26 / 0	07 Jul 19:17	Never	124.8
data10_7TeV.00158707.physics_CosmicCalo.merge.RAW	28 / 0	07 Jul 19:16	Never	124.8
data10_7TeV.00158660.physics_MuonswBeam.merge.RAW	42 / 0	07 Jul 10:44	Never	133.3
data10_7TeV.00158582.physics_MinBias.recon.ESD.f273	1483 / 286	07 Jul 05:10	08 Jul 09:41	138.9
data10_7TeV.00158653.physics_RNDM.merge.RAW	420 / 276	06 Jul 21:43	08 Jul 09:42	146.3
data10_7TeV.00158549.physics_M...	230 / 15	06 Jul 21:10	08 Jul 09:42	146.9
data10_7TeV.00158549.physics_L1Calo.recon.ESD.f273	1050 / 1042	06 Jul 16:18	08 Jul 09:41	151.7

Check numbers

Datasets, which had not been completely transferred (stuck or just slow)

PanDA Monitoring (1)

- ATLAS 'production' run through a single grid executor called PanDA
  - **P**roduction **an**d **D**istributed **A**nalysis

- 'Production' usually meant MonteCarlo event generation, but in ATLAS this 'production system' also manages T1 reconstruction as well as physics and performance group analyses

PanDA is a Pilot-based workload management system:

- Pilot jobs are directed to sites and contact the Server upon activation;
- The Server assigns a payload to be executed and provides URLs for staging output files

- PanDA server performs workload management and brokerage duties
  - Ensures that ATLAS grid resources across sites are used optimally and that experiment workload policy is adhered to

The PanDA monitor provides a web browser interface to the Panda system:

- datablocks, jobs, sites, system component logs, job status logs, production statistics, etc.

PanDA Monitoring (2)

Configuration | Production | Clouds | Incidents | DDM | PandaMover | AutoPilot | Sites | Releases | Analysis | Stats | Physics data | Usage | ProdDash | DDMDash

2 min old Update

Panda monitor
Times are in UTC

Panda info and help

Not logged in. List users

Panda Production Operations Dashboard

Panda shift calendar mailing list
ADCoS twiki elog calendar mailing list
Production task support mailing list

Click for help

Jobs - search
States: running, defined, waiting, assigned, activated, finished, failed
Types: analysis, prod, install, test

Quick search
Panda job ID
Batch ID
Dataset
Task request
Task status
File

Summaries
Blocks: days
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Usage 1, 3 days

Tasks - search
Generic Task Req
EvGen Task Req
CTBsim Task Req
Task list
New Tag
Bug Report
Task overview query

Datasets - search
DQ2 Popularity
Aborted datasets
Datasets Browser

Datasets Distribution
DaTRI:
- Data_Transfer_Request
- List_User_Requests
- List_Pathena_Requests

Servers: CERN:OK Logger:OK

Active tasks: CA:15 DE:27 ES:18 FR:31 IT:3 ND:8 NL:13 TW:3 UK:20 US:40
Bamboo task brokerage, job submissions, status over last 12 hours

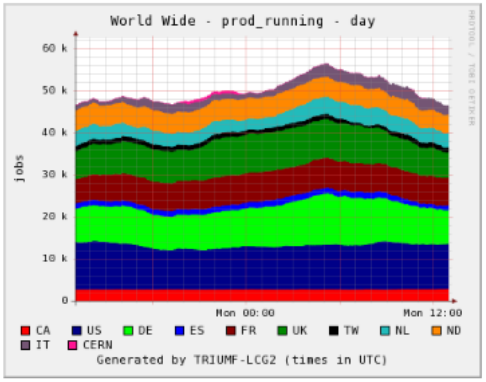
Jobs updated >12 hrs ago: activated: 59953 running: none
Jobs updated >36 hrs ago: transferring: 3

Summary plots by cloud

Cloud efficiency history

Ganglia World Wide Summary

More plots: ALL | jobs in CA | last hour | Go



Production job summary, last 12 hours (Details: errors, nodes)
Comments/requests on the new summary table to Torre (wenaus@gmail.com). Old version of page is here
Processing types: evgen(4991) merge(4637) pile(9449) prod_test(195) reprocessing(31391) simul(238750) validation(84)
Users: Junji.Tojo(232) Michiru.Kaneda(21716) Thomas.Koffas(143) a.bocci(1141) aras.papadelis(45) borut.kersevan(257549) douglas(195) jamie.boyd(34) john.morris(1587) leonardo.carminati(116) menke(2442) minoru.hirose(3956) pacheco(317) yhj(24)
Pilot counts are for the last 3 hours. Error rates above 5% are shown in red.

Cloud	Pilots	Latest	defined	assigned	waiting	activated	sent	running	holding	transferring	finished	failed	cancelled	%fail
ALL			784	445	0	94963	1	46288	2338	24178	93091	27340	69	23%
CA	889	10-18 12:55	184	0	0	5476	0	2794	95	2176	5147	16	0	0%
CERN (hpkeroff)	826	10-18	0	0	0	0	0	0	0	0	54	0	0	0%

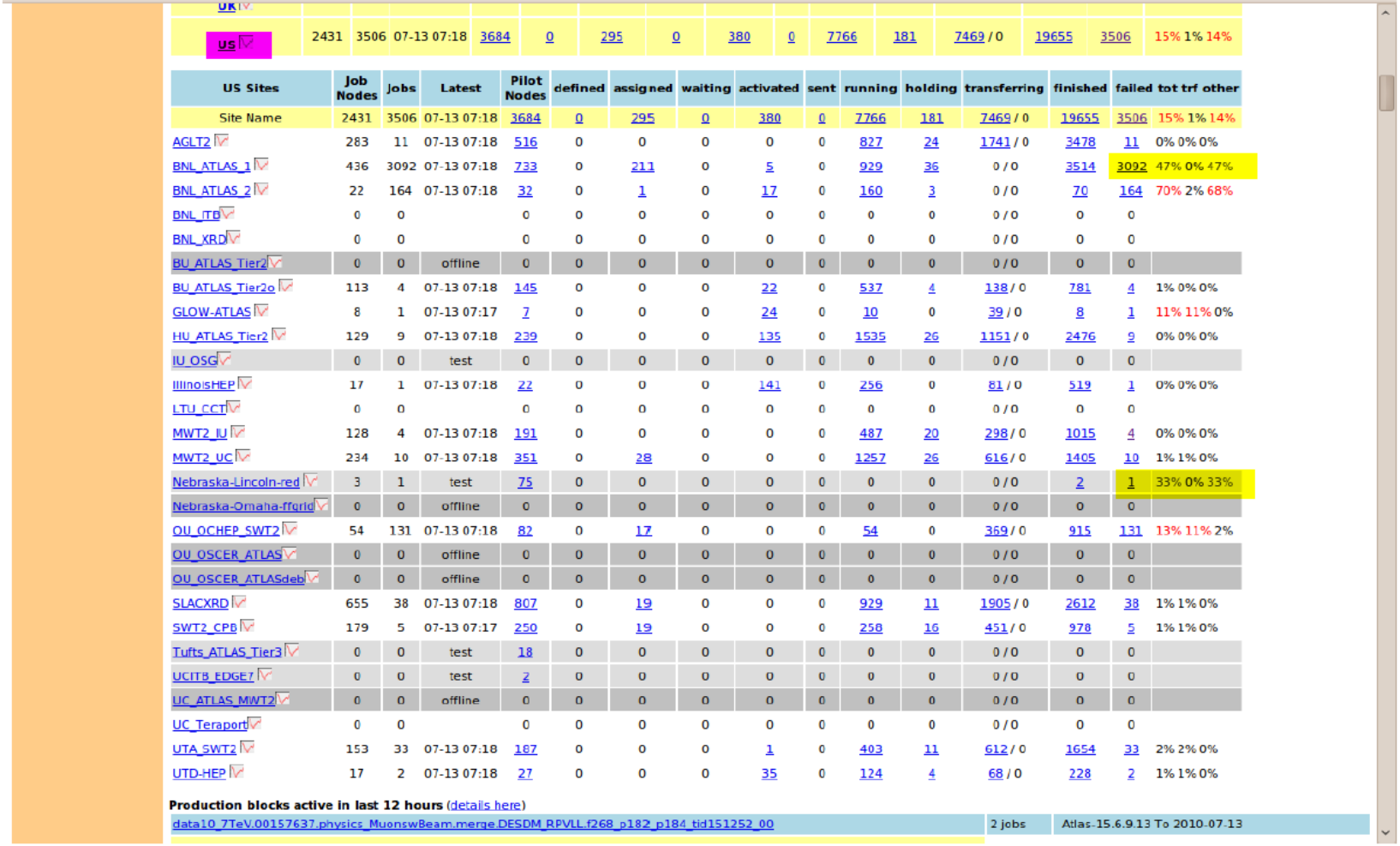
Production blocks active in last 12 hours (details here)

data10_7TeV.00158801.physics_MuonswBeam.recon.AOD.r1552_tid177453_00	34 jobs	Atlas-15.6.12.7 From 2010-10-17 To 2010-10-18
finished:34		
data10_7TeV.00165591.physics_Egamma.merge.NTUP_TOPVAL.f292_m609_p291_tid177299_00	490 jobs	Atlas-15.6.13.3.2 From 2010-10-18 To 2010-10-18
failed:490		
data10_7TeV.00165591.physics_JetTauEtmiss.merge.D2AODM_TOPJET.f292_m609_p294_tid177302_00	768 jobs	Atlas-15.6.13.3.2 From 2010-10-18 To 2010-10-18
failed:768		
data10_7TeV.00165591.physics_JetTauEtmiss.merge.NTUP_TOPVAL.f292_m609_p295_tid177303_00	768 jobs	Atlas-15.6.13.3.2 From 2010-10-18 To 2010-10-18
failed:768		
data10_7TeV.00165591.physics_JetTauEtmiss.merge.NTUP_TOPVAL.f292_m609_p296_tid177304_00	768 jobs	Atlas-15.6.13.3.2 From 2010-10-18 To 2010-10-18
failed:768		

How to look?

PanDA Monitoring (3)

> Open site view for worst cloud by clicking on it



US Sites	Job Nodes	Jobs	Latest	Pilot Nodes	defined	assigned	waiting	activated	sent	running	holding	transferring	finished	failed	tot trf other
Site Name	2431	3506	07-13 07:18	3684	0	295	0	380	0	7766	181	7469 / 0	19655	3506	15% 1% 14%
AGLT2	283	11	07-13 07:18	516	0	0	0	0	0	827	24	1741 / 0	3478	11	0% 0% 0%
BNL_ATLAS_1	436	3092	07-13 07:18	733	0	211	0	5	0	929	36	0 / 0	3514	3092	47% 0% 47%
BNL_ATLAS_2	22	164	07-13 07:18	32	0	1	0	17	0	160	3	0 / 0	70	164	70% 2% 68%
BNL_ITB	0	0		0	0	0	0	0	0	0	0	0 / 0	0	0	
BNL_XRD	0	0		0	0	0	0	0	0	0	0	0 / 0	0	0	
BU_ATLAS_Tier2	0	0	offline	0	0	0	0	0	0	0	0	0 / 0	0	0	
BU_ATLAS_Tier2o	113	4	07-13 07:18	145	0	0	0	22	0	537	4	138 / 0	781	4	1% 0% 0%
GLOW-ATLAS	8	1	07-13 07:17	7	0	0	0	24	0	10	0	39 / 0	8	1	11% 11% 0%
HU_ATLAS_Tier2	129	9	07-13 07:18	239	0	0	0	135	0	1535	26	1151 / 0	2476	9	0% 0% 0%
IU_OSG	0	0	test	0	0	0	0	0	0	0	0	0 / 0	0	0	
IllinoisHEP	17	1	07-13 07:18	22	0	0	0	141	0	256	0	81 / 0	519	1	0% 0% 0%
LTU_CCT	0	0		0	0	0	0	0	0	0	0	0 / 0	0	0	
MWT2_IU	128	4	07-13 07:18	191	0	0	0	0	0	487	20	298 / 0	1015	4	0% 0% 0%
MWT2_UC	234	10	07-13 07:18	351	0	28	0	0	0	1257	26	616 / 0	1405	10	1% 1% 0%
Nebraska-Lincoln-red	3	1	test	75	0	0	0	0	0	0	0	0 / 0	2	1	33% 0% 33%
Nebraska-Omaha-ffgrid	0	0	offline	0	0	0	0	0	0	0	0	0 / 0	0	0	
OU_OCHEP_SWT2	54	131	07-13 07:18	82	0	17	0	0	0	54	0	369 / 0	915	131	13% 11% 2%
OU_OSCER_ATLAS	0	0	offline	0	0	0	0	0	0	0	0	0 / 0	0	0	
OU_OSCER_ATLASdeb	0	0	offline	0	0	0	0	0	0	0	0	0 / 0	0	0	
SLACXRD	655	38	07-13 07:18	807	0	19	0	0	0	929	11	1905 / 0	2612	38	1% 1% 0%
SWT2_CPB	179	5	07-13 07:17	250	0	19	0	0	0	258	16	451 / 0	978	5	1% 1% 0%
Tufts_ATLAS_Tier3	0	0	test	18	0	0	0	0	0	0	0	0 / 0	0	0	
UCITB_EDGE7	0	0	test	2	0	0	0	0	0	0	0	0 / 0	0	0	
UC_ATLAS_MWT2	0	0	offline	0	0	0	0	0	0	0	0	0 / 0	0	0	
UC_Teraport	0	0		0	0	0	0	0	0	0	0	0 / 0	0	0	
UTA_SWT2	153	33	07-13 07:18	187	0	0	0	1	0	403	11	612 / 0	1654	33	2% 2% 0%
UTD-HEP	17	2	07-13 07:18	27	0	0	0	35	0	124	4	68 / 0	228	2	1% 1% 0%

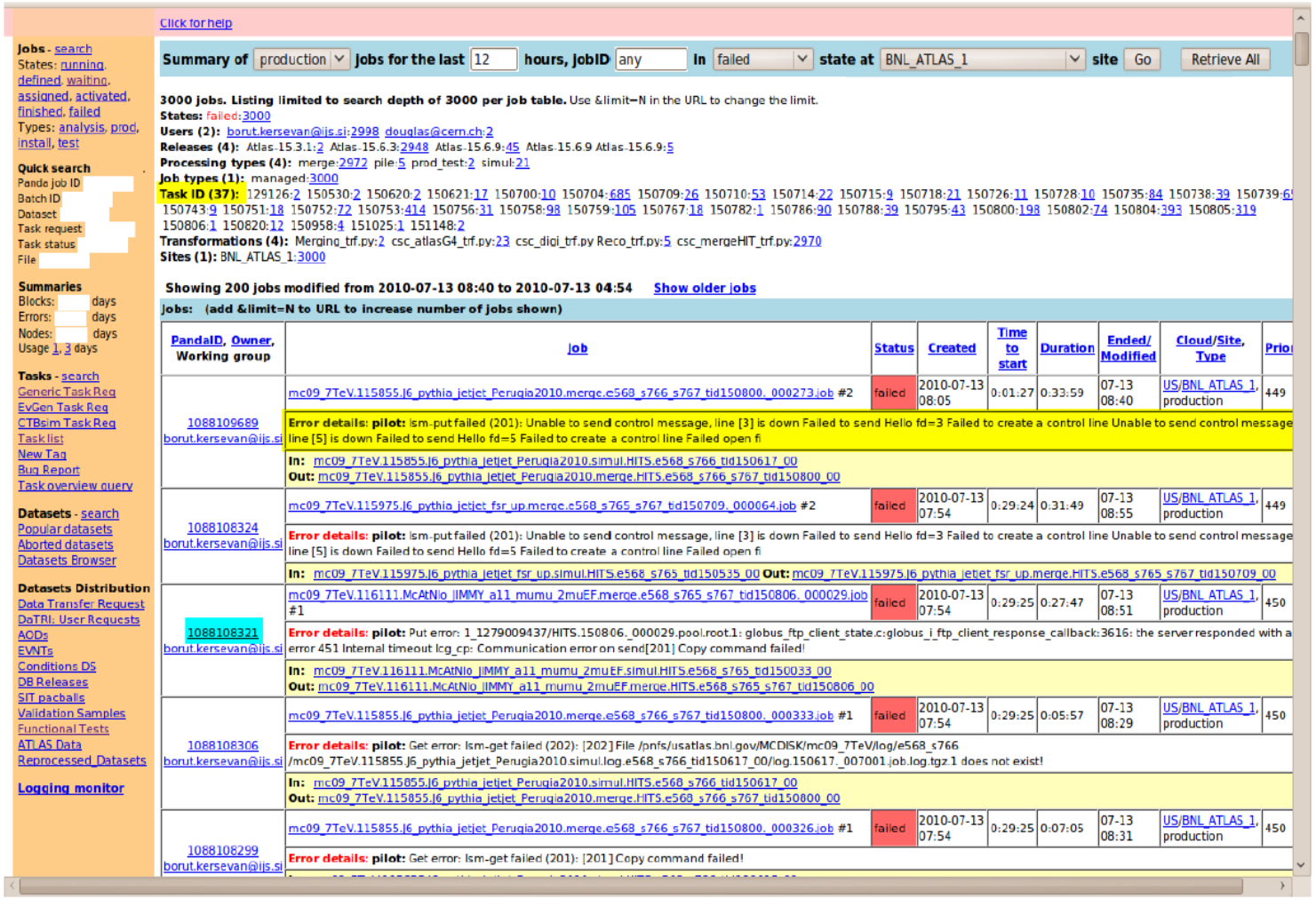
Production blocks active in last 12 hours (details here)

data10_7TeV.00157637.physics_MuonswBeam.merge.DESDM_RPVLL.f268_p182_p184_tid151252_00	2 jobs	Atlas-15.6.9.13 To 2010-07-13

PanDA Monitoring (4)

Following up a problem

- Overview of failed jobs and a short reason for the failure



Click for help

Jobs - search
States: running, defined, waiting, assigned, activated, finished, failed
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Quick search
Pande job ID
Batch ID
Dataset
Task request
Task status
File

Summaries
Blocks: days
Errors: days
Nodes: days
Usage 1, 3 days

Tasks - search
Generic Task Req
EvGen Task Req
CTBsim Task Req
Task list
New Tag
Bug Report
Task overview query

Datasets - search
Popular datasets
Aborted datasets
Datasets Browser

Datasets Distribution
Data Transfer Request
DaTRI: User Requests
AODs
EVNTs
Conditions DS
DB Releases
SIT pacballs
Validation Samples
Functional Tests
ATLAS Data Reprocessed Datasets

Logging monitor

Summary of production **Jobs for the last** 12 **hours, JobID** any **in** failed **state at** BNL_ATLAS_1 **site** Go Retrieve All

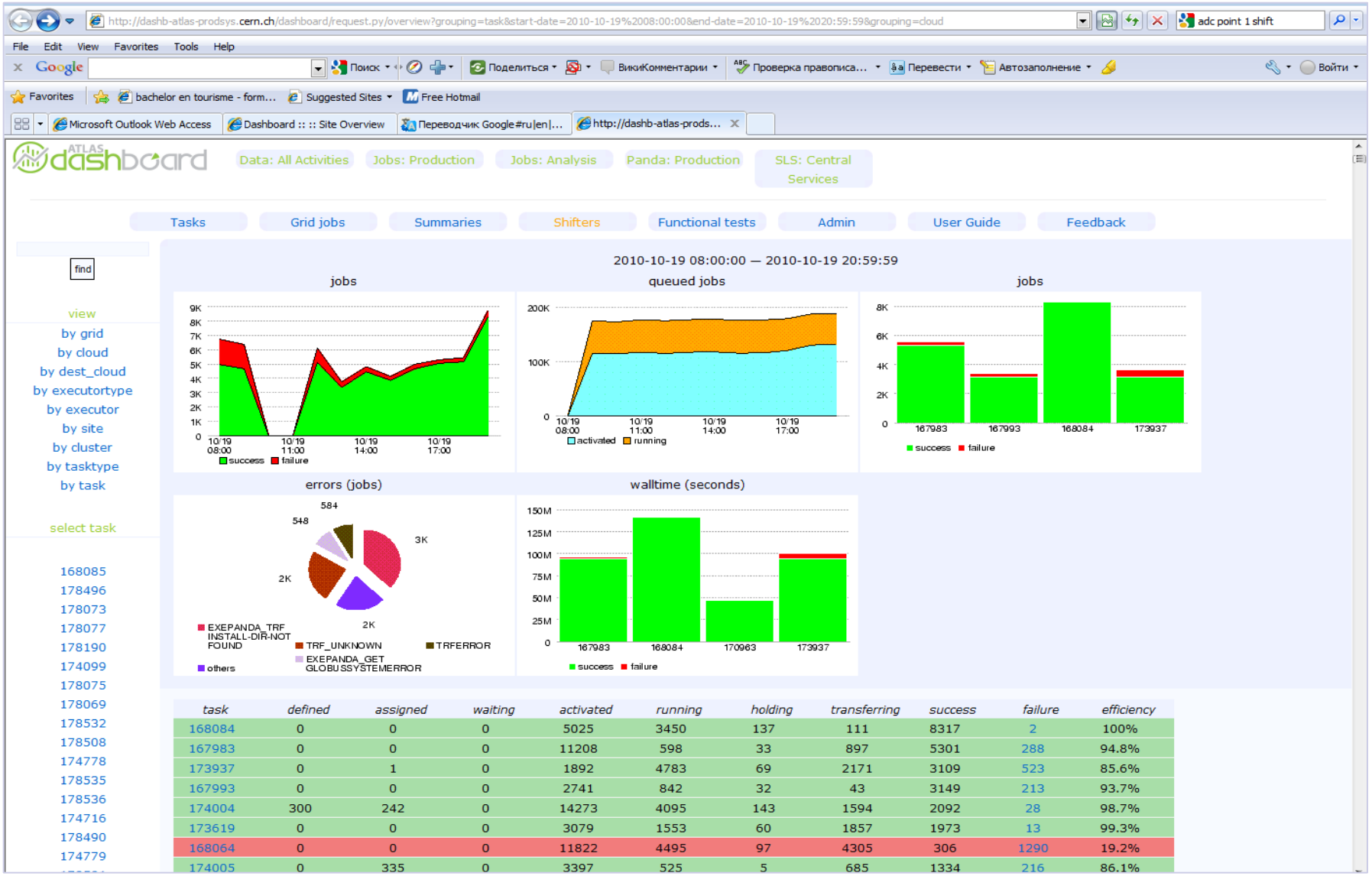
3000 jobs. Listing limited to search depth of 3000 per job table. Use &limit=N in the URL to change the limit.
States: failed:3000
Users (2): borut.kersevan@ijs.si:2998 douglas@cern.ch:2
Releases (4): Atlas-15.3.1:2 Atlas-15.6.3:2948 Atlas-15.6.9:45 Atlas-15.6.9 Atlas-15.6.9:5
Processing types (4): merge:2972 pile:5 prod_test:2 simul:21
Job types (1): managed:3000
Task ID (37): 129126:2 150530:2 150620:2 150621:17 150700:10 150704:685 150709:26 150710:53 150714:22 150715:9 150718:21 150726:11 150728:10 150735:84 150738:39 150739:6
150743:9 150751:18 150752:72 150753:414 150756:31 150758:98 150759:105 150767:18 150782:1 150786:90 150788:39 150795:43 150800:198 150802:74 150804:393 150805:319
150806:1 150820:12 150958:4 151025:1 151148:2
Transformations (4): Merging_trf.py:2 csc_atlasG4_trf.py:23 csc_digi_trf.py Reco_trf.py:5 csc_mergeHIT_trf.py:2970
Sites (1): BNL_ATLAS_1:3000

Showing 200 jobs modified from 2010-07-13 08:40 to 2010-07-13 04:54 Show older jobs

Jobs: (add &limit=N to URL to increase number of jobs shown)

PandaID, Owner, Working group	Job	Status	Created	Time to start	Duration	Ended/ Modified	Cloud/Site, Type	Prio
1088109689 borut.kersevan@ijs.si	mc09_7TeV.115855.J6_pythia_jetjet_Perugia2010.merge.e568_s766_s767_tid150800_000273.job #2	failed	2010-07-13 08:05	0:01:27	0:33:59	07-13 08:40	US/BNL_ATLAS_1, production	449
	Error details: pilot: lsm-put failed (201): Unable to send control message, line [3] is down Failed to send Hello fd=3 Failed to create a control line Unable to send control message line [5] is down Failed to send Hello fd=5 Failed to create a control line Failed open fi							
	In: mc09_7TeV.115855.J6_pythia_jetjet_Perugia2010.simul.HITS.e568_s766_tid150617_00 **Out:** mc09_7TeV.115855.J6_pythia_jetjet_Perugia2010.merge.HITS.e568_s766_s767_tid150800_00							
1088108324 borut.kersevan@ijs.si	mc09_7TeV.115975.J6_pythia_jetjet_fsr_up.merge.e568_s765_s767_tid150709_000064.job #2	failed	2010-07-13 07:54	0:29:24	0:31:49	07-13 08:55	US/BNL_ATLAS_1, production	449
	Error details: pilot: lsm-put failed (201): Unable to send control message, line [3] is down Failed to send Hello fd=3 Failed to create a control line Unable to send control message line [5] is down Failed to send Hello fd=5 Failed to create a control line Failed open fi							
	In: mc09_7TeV.115975.J6_pythia_jetjet_fsr_up.simul.HITS.e568_s765_tid150535_00 **Out:** mc09_7TeV.115975.J6_pythia_jetjet_fsr_up.merge.HITS.e568_s765_s767_tid150709_00							
1088108321 borut.kersevan@ijs.si	mc09_7TeV.116111.McAtNlo_JIMMY_a11_mumu_2muEF.merge.e568_s765_s767_tid150806_000029.job #1	failed	2010-07-13 07:54	0:29:25	0:27:47	07-13 08:51	US/BNL_ATLAS_1, production	450
	Error details: pilot: Put error: 1_1279009437/HITS.150806._000029.pool.root.1: globus_ftp_client_state.c:globus_i_ftp_client_response_callback:3616: the server responded with a error 451 Internal timeout lcg_cp: Communication error on send[201] Copy command failed!							
	In: mc09_7TeV.116111.McAtNlo_JIMMY_a11_mumu_2muEF.simul.HITS.e568_s765_tid150033_00 **Out:** mc09_7TeV.116111.McAtNlo_JIMMY_a11_mumu_2muEF.merge.HITS.e568_s765_s767_tid150806_00							
1088108306 borut.kersevan@ijs.si	mc09_7TeV.115855.J6_pythia_jetjet_Perugia2010.merge.e568_s766_s767_tid150800_000333.job #1	failed	2010-07-13 07:54	0:29:25	0:05:57	07-13 08:29	US/BNL_ATLAS_1, production	450
	Error details: pilot: Get error: lsm-get failed (202): [202] File /pnfs/usatlas.bnl.gov/MCDISK/mc09_7TeV/log/e568_s766 /mc09_7TeV.115855.J6_pythia_jetjet_Perugia2010.simul.log.e568_s766_tid150617_00/log.150617._007001.job.log.tgz.1 does not exist!							
	In: mc09_7TeV.115855.J6_pythia_jetjet_Perugia2010.simul.HITS.e568_s766_tid150617_00 **Out:** mc09_7TeV.115855.J6_pythia_jetjet_Perugia2010.merge.HITS.e568_s766_s767_tid150800_00							
1088108299 borut.kersevan@ijs.si	mc09_7TeV.115855.J6_pythia_jetjet_Perugia2010.merge.e568_s766_s767_tid150800_000326.job #1	failed	2010-07-13 07:54	0:29:25	0:07:05	07-13 08:31	US/BNL_ATLAS_1, production	450
	Error details: pilot: Get error: lsm-get failed (201): [201] Copy command failed!							

Dashboard overview of the production jobs



task	defined	assigned	waiting	activated	running	holding	transferring	success	failure	efficiency
168084	0	0	0	5025	3450	137	111	8317	2	100%
167983	0	0	0	11208	598	33	897	5301	288	94.8%
173937	0	1	0	1892	4783	69	2171	3109	523	85.6%
167993	0	0	0	2741	842	32	43	3149	213	93.7%
174004	300	242	0	14273	4095	143	1594	2092	28	98.7%
173619	0	0	0	3079	1553	60	1857	1973	13	99.3%
168064	0	0	0	11822	4495	97	4305	306	1290	19.2%
174005	0	335	0	3397	525	5	685	1334	216	86.1%

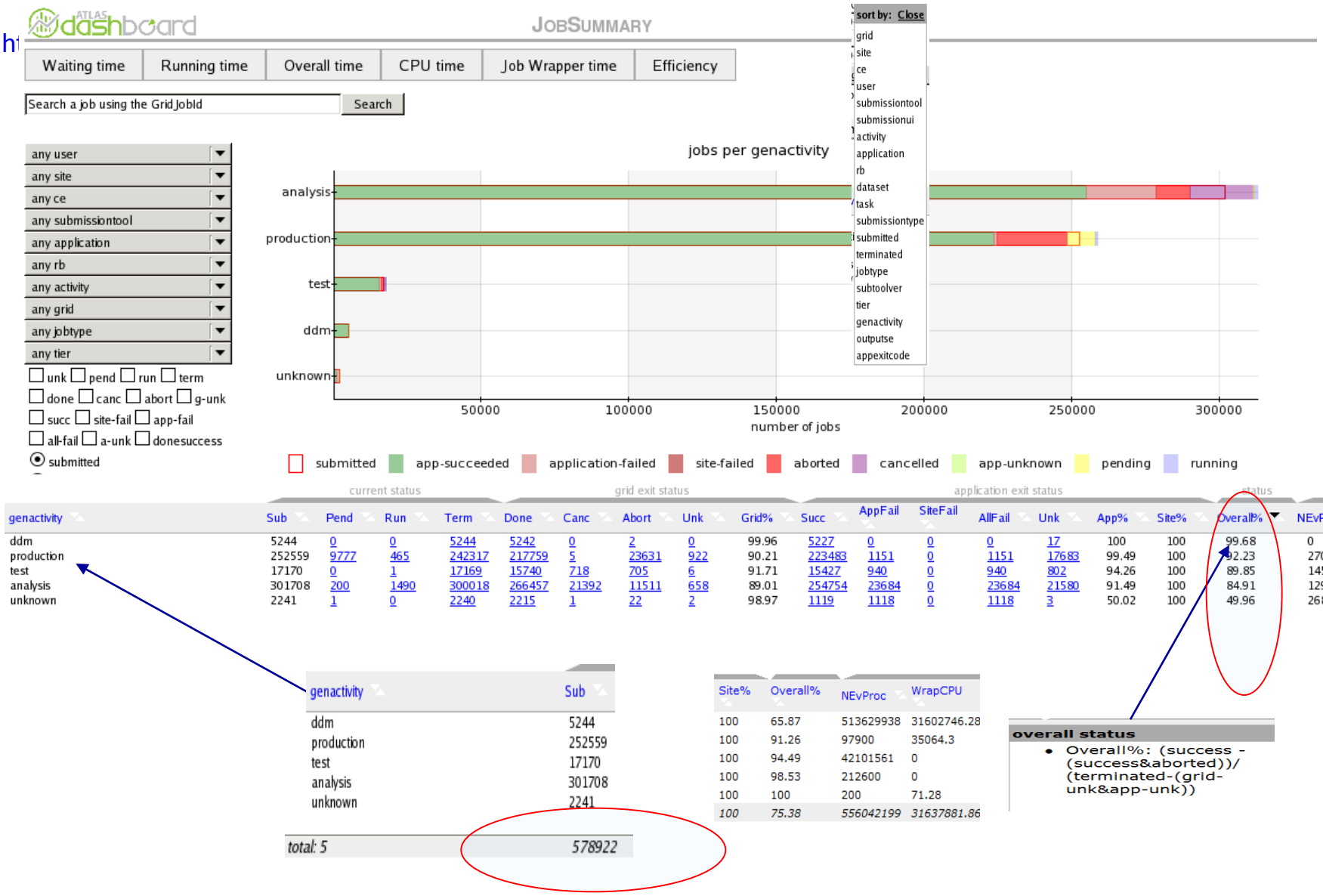
Job Summary (1)

- Job Summary enables very flexible access to recent monitoring data and shows the job processing of a VO at run-time

- Interactive view : What is going on now regarding job processing in the scope of ATLAS

- Aimed at different types of users:
  - individual scientists using the Grid for data analysis, user support teams, site admins, VO managers, managers of different computing projects.

Job Summary (2)



current status | grid exit status | application exit status | status

genactivity	Sub	Pend	Run	Term	Done	Canc	Abort	Unk	Grid%	Succ	AppFail	SiteFail	AllFail	Unk	App%	Site%	Overall%	NEvProc
ddm	5244	0	0	5244	5242	0	2	0	99.96	5227	0	0	0	17	100	100	99.68	0
production	252559	9777	465	242317	217759	5	23631	922	90.21	223483	1151	0	1151	17683	99.49	100	92.23	270803619
test	17170	0	1	17169	15740	718	705	6	91.71	15427	940	0	940	802	94.26	100	89.85	1450132
analysis	301708	200	1490	300018	266457	21392	11511	658	89.01	254754	23684	0	23684	21580	91.49	100	84.91	129841461
unknown	2241	1	0	2240	2215	1	22	2	98.97	1119	1118	0	1118	3	50.02	100	49.96	268923

genactivity	Sub
ddm	5244
production	252559
test	17170
analysis	301708
unknown	2241
total: 5	578922

Site%	Overall%	NEvProc	WrapCPU
100	65.87	513629938	31602746.28
100	91.26	97900	35064.3
100	94.49	42101561	0
100	98.53	212600	0
100	100	200	71.28
100	*75.38*	*556042199*	*31637881.86*

overall status

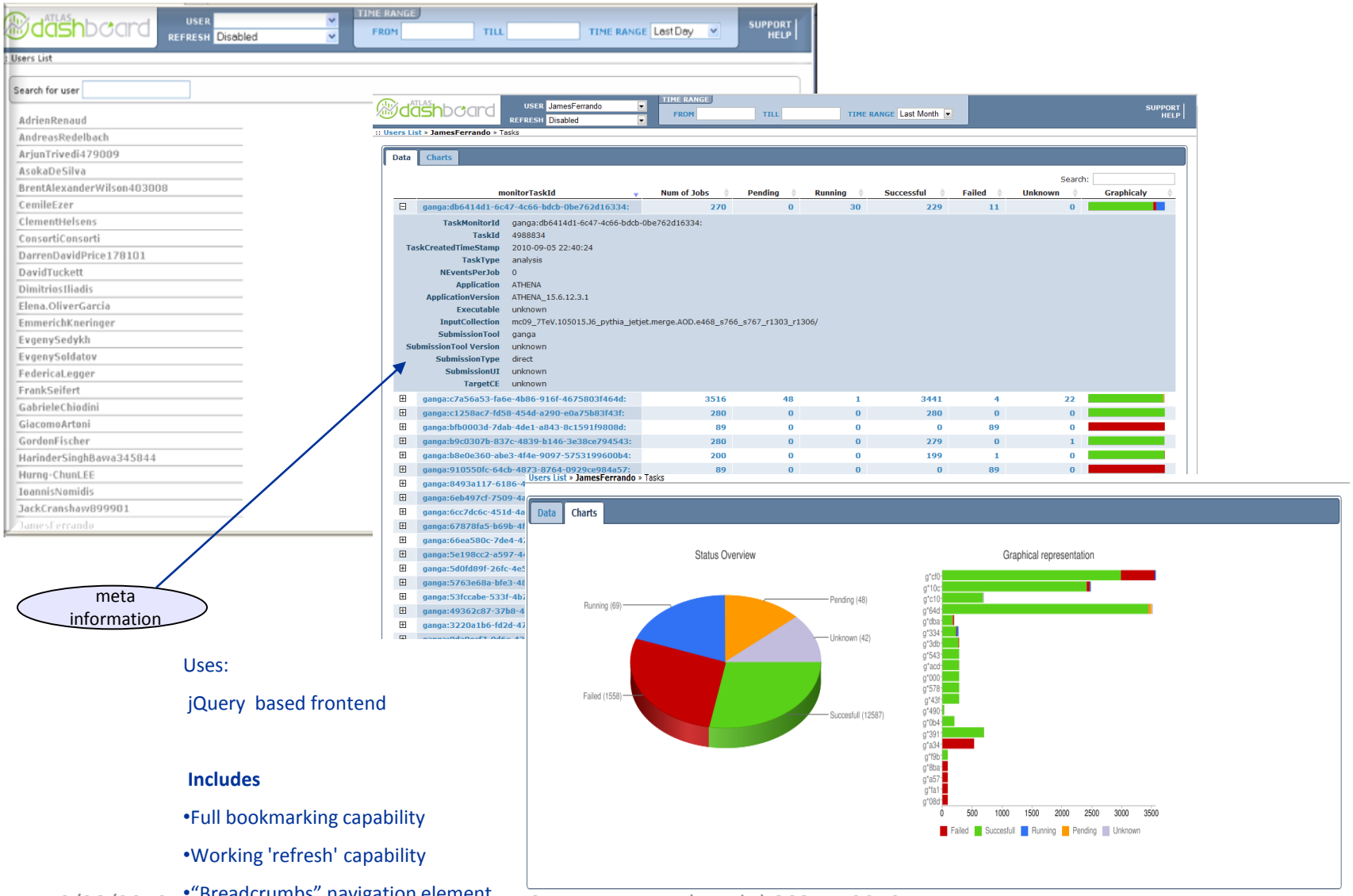
- Overall%: (success - (success&aborted))/ (terminated-(grid-unk&app-unk))

Analysis Job Monitoring (1)

- Collects and exposes a user-centric set of information to the user regarding submitted tasks.
- Focused on the user's perspective.
- Offers a wide selection of graphical plots.
- User-driven development.
- The job monitoring application provides a consistent way of following a user’s analysis jobs regardless of the submission tool.

Analysis Job monitoring (2)

http://dashboard10.cern.ch/index.html



meta information

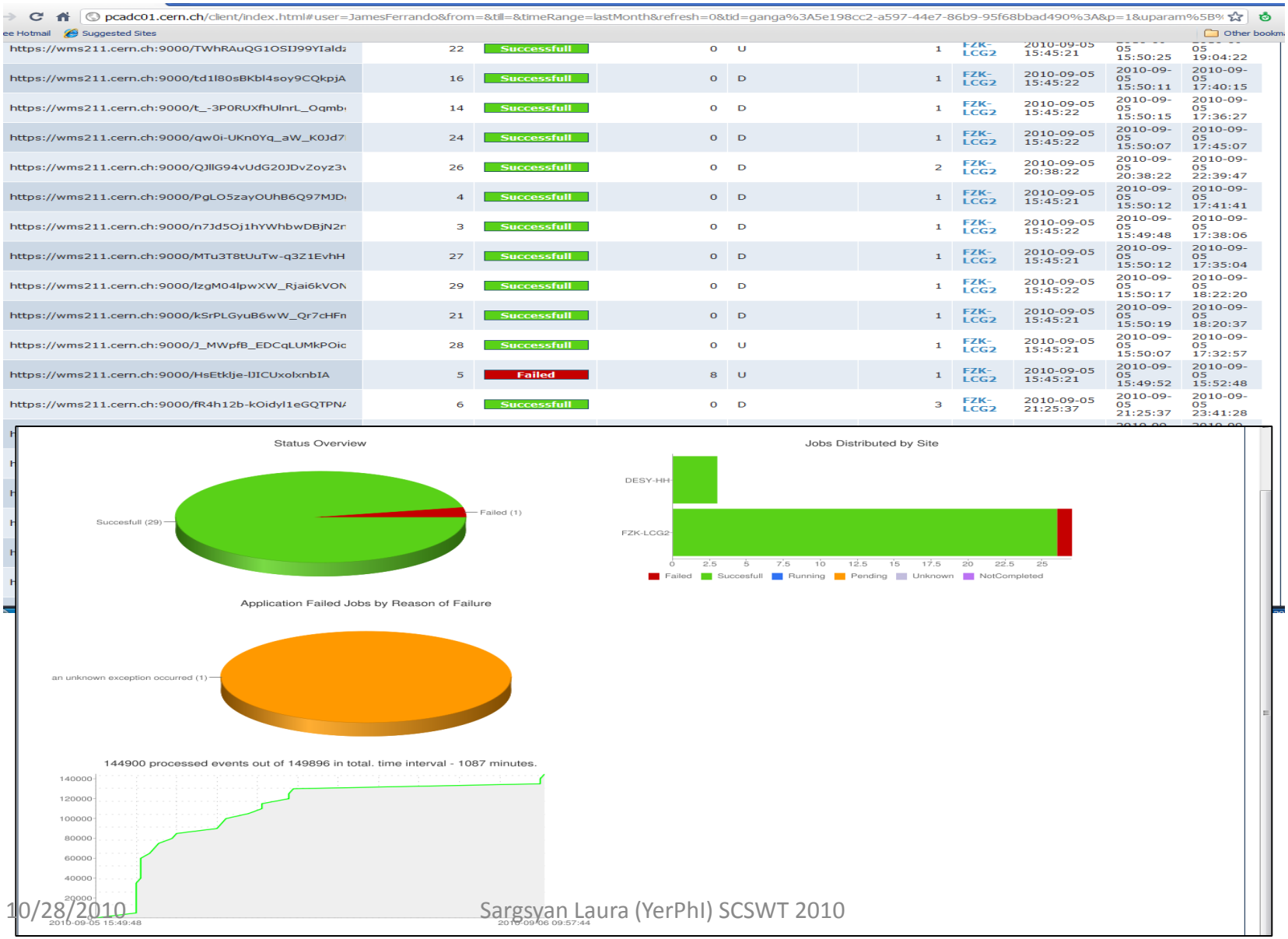
Uses:

jQuery based frontend

Includes

- Full bookmarking capability
- Working 'refresh' capability
- "Breadcrumbs" navigation element

Analysis Job monitoring (3)



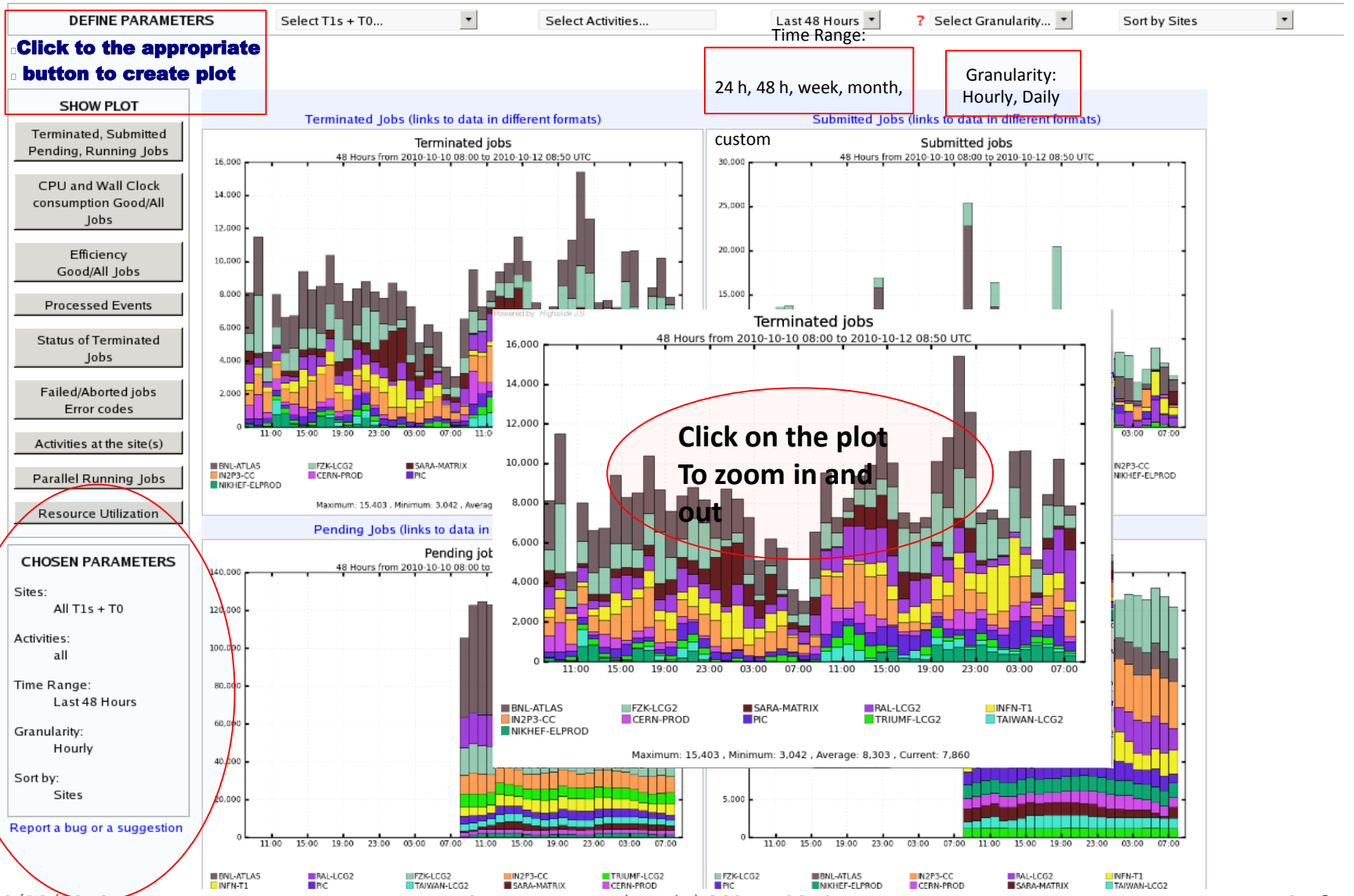
Historical view
(Under development)

Functionality

- Number of terminated, submitted, pending, running jobs
- Distribution of failed jobs by failure codes/reasons/categories
- CPU/Wall clock consumption, efficiency as cpu versus wallclock
- Processed events : number of processed events as a function of time, CPU/wallclock time spent on a single event
- Resource utilization, number of used slots, efficiency of site usage compared to pledges
- Activities at the site. Single site view with job processing metrics . Data transfer distributions will be added soon.
- All data can be filtered by site or activity. Filtering by cloud is coming soon
- Any time range can be selected
- Available granularities are hourly/daily/weekly/monthly
- All data is available in machine-readable format
- All plots are available via direct link

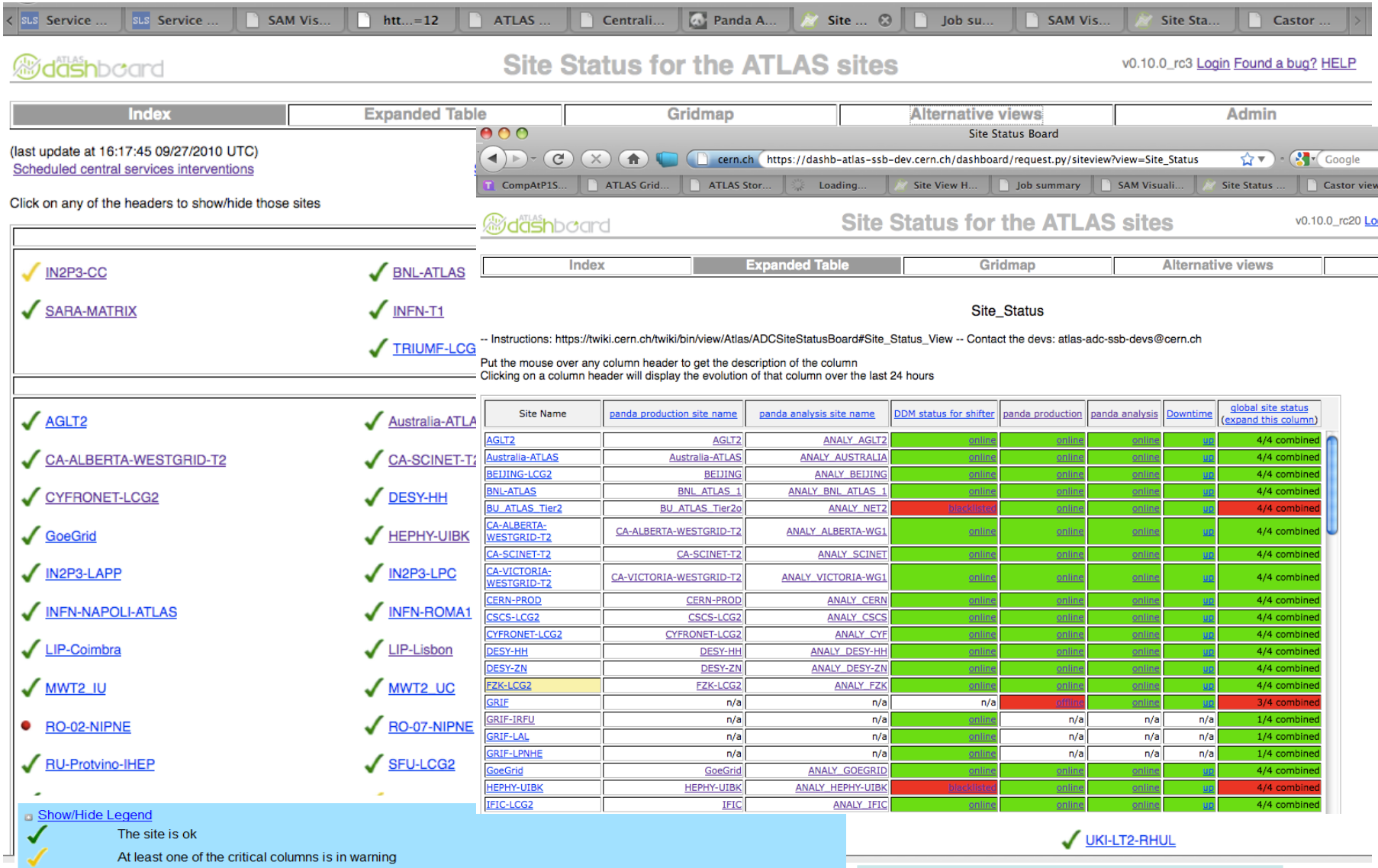
Terminated, Submitted, Pending, Running Jobs

http://dashb-atlas-job-dev.cern.ch/dashboard/request.py/dailysummary



4

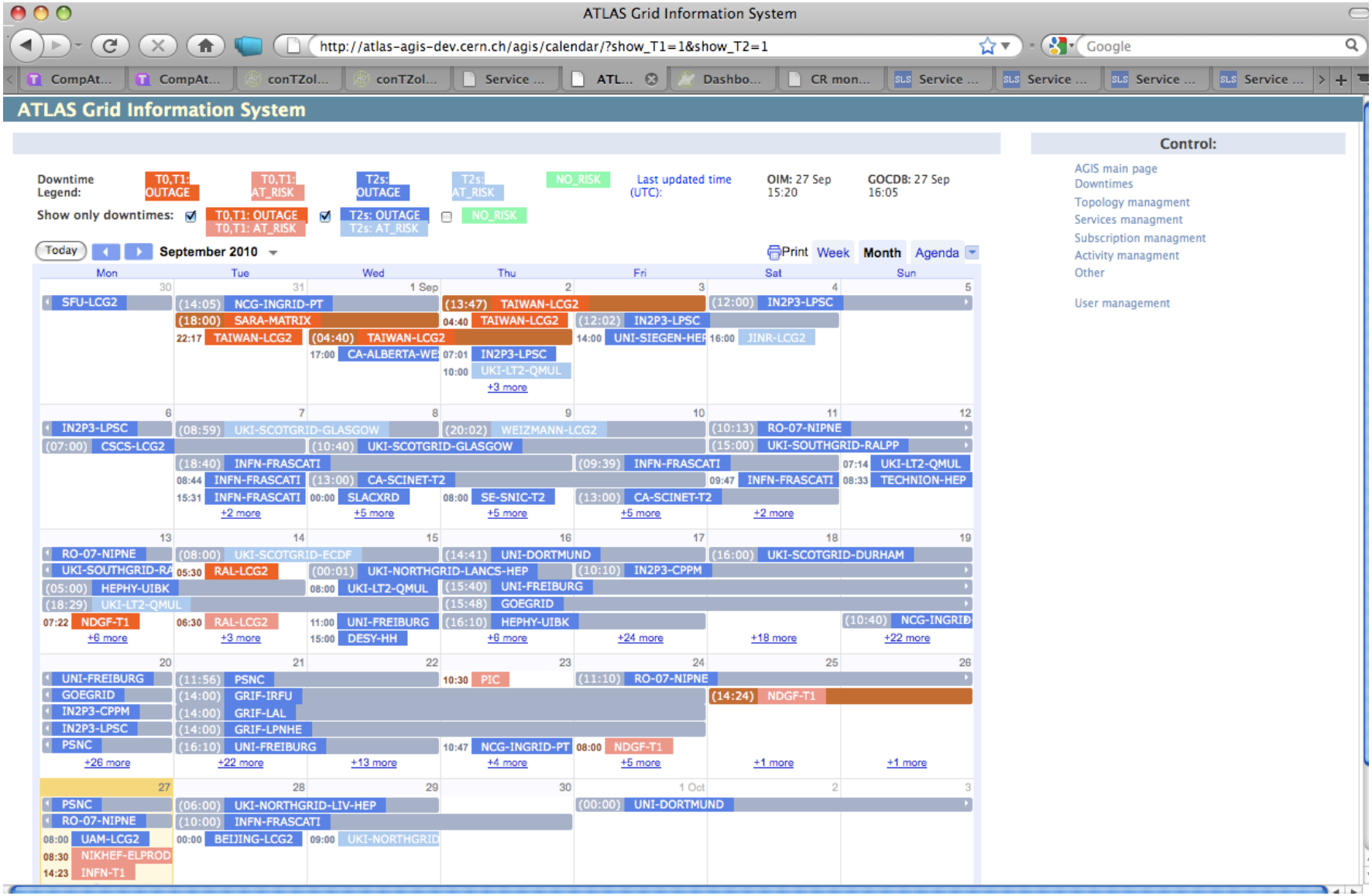
Site Status Board



Site Name	panda production site name	panda analysis site name	DDM status for shifter	panda production	panda analysis	Downtime	global site status (expand this column)
AGLT2	AGLT2	ANALY_AGLT2	online	online	online	up	4/4 combined
Australia-ATLAS	Australia-ATLAS	ANALY_AUSTRALIA	online	online	online	up	4/4 combined
BEIJING-LCG2	BEIJING	ANALY_BEIJING	online	online	online	up	4/4 combined
BNL-ATLAS	BNL_ATLAS_1	ANALY_BNL_ATLAS_1	online	online	online	up	4/4 combined
BU_ATLAS_Tier2	BU_ATLAS_Tier2o	ANALY_NET2	blacklisted	online	online	up	4/4 combined
CA-ALBERTA-WESTGRID-T2	CA-ALBERTA-WESTGRID-T2	ANALY_ALBERTA-WG1	online	online	online	up	4/4 combined
CA-SCINET-T2	CA-SCINET-T2	ANALY_SCINET	online	online	online	up	4/4 combined
CA-VICTORIA-WESTGRID-T2	CA-VICTORIA-WESTGRID-T2	ANALY_VICTORIA-WG1	online	online	online	up	4/4 combined
CERN-PROD	CERN-PROD	ANALY_CERN	online	online	online	up	4/4 combined
CSCS-LCG2	CSCS-LCG2	ANALY_CSCS	online	online	online	up	4/4 combined
CYFRONET-LCG2	CYFRONET-LCG2	ANALY_CYF	online	online	online	up	4/4 combined
DESY-HH	DESY-HH	ANALY_DESY-HH	online	online	online	up	4/4 combined
DESY-ZN	DESY-ZN	ANALY_DESY-ZN	online	online	online	up	4/4 combined
FZK-LCG2	FZK-LCG2	ANALY_FZK	online	online	online	up	4/4 combined
GRIF	n/a	n/a	n/a	offline	online	up	3/4 combined
GRIF-IRFU	n/a	n/a	online	n/a	n/a	n/a	1/4 combined
GRIF-LAL	n/a	n/a	online	n/a	n/a	n/a	1/4 combined
GRIF-LPNHE	n/a	n/a	online	n/a	n/a	n/a	1/4 combined
GoeGrid	GoeGrid	ANALY_GOEGRID	online	online	online	up	4/4 combined
HEPHY-UIBK	HEPHY-UIBK	ANALY_HEPHY-UIBK	blacklisted	online	online	up	4/4 combined
IFIC-LCG2	IFIC	ANALY_IFIC	online	online	online	up	4/4 combined

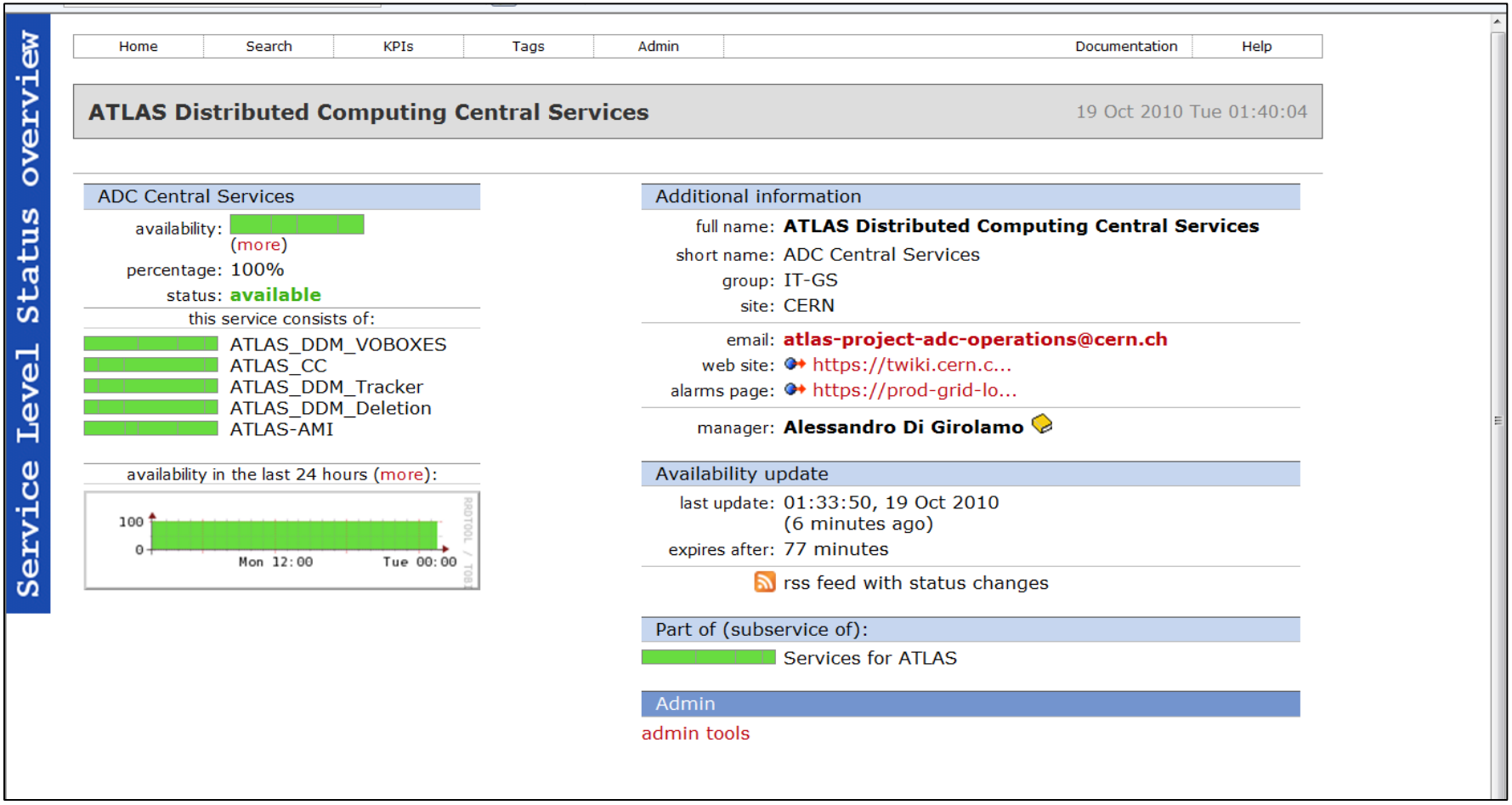
Shifters, Sites and Experts

AGIS - ATLAS Grid Downtime Calendar

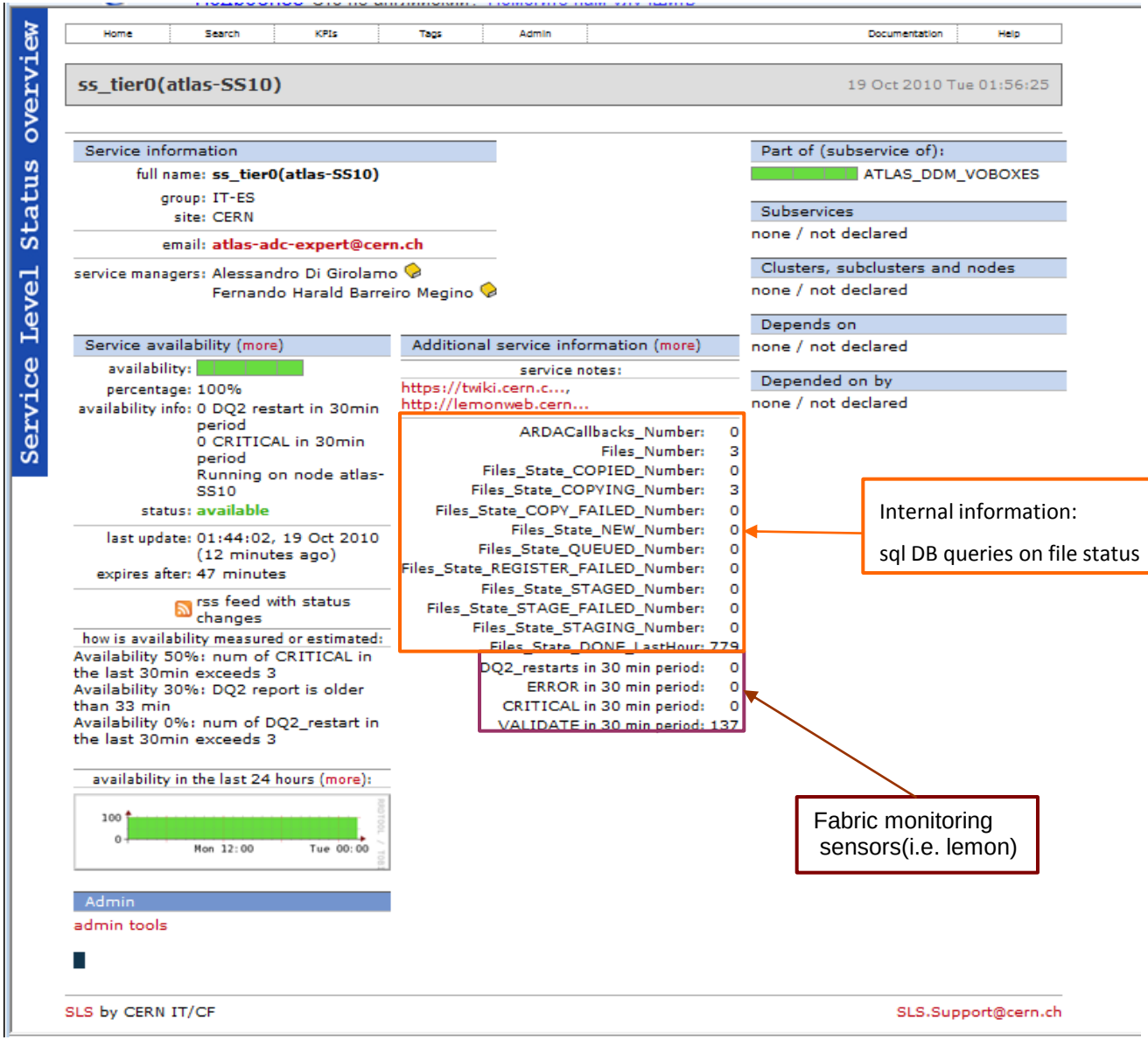


Central Services Monitoring

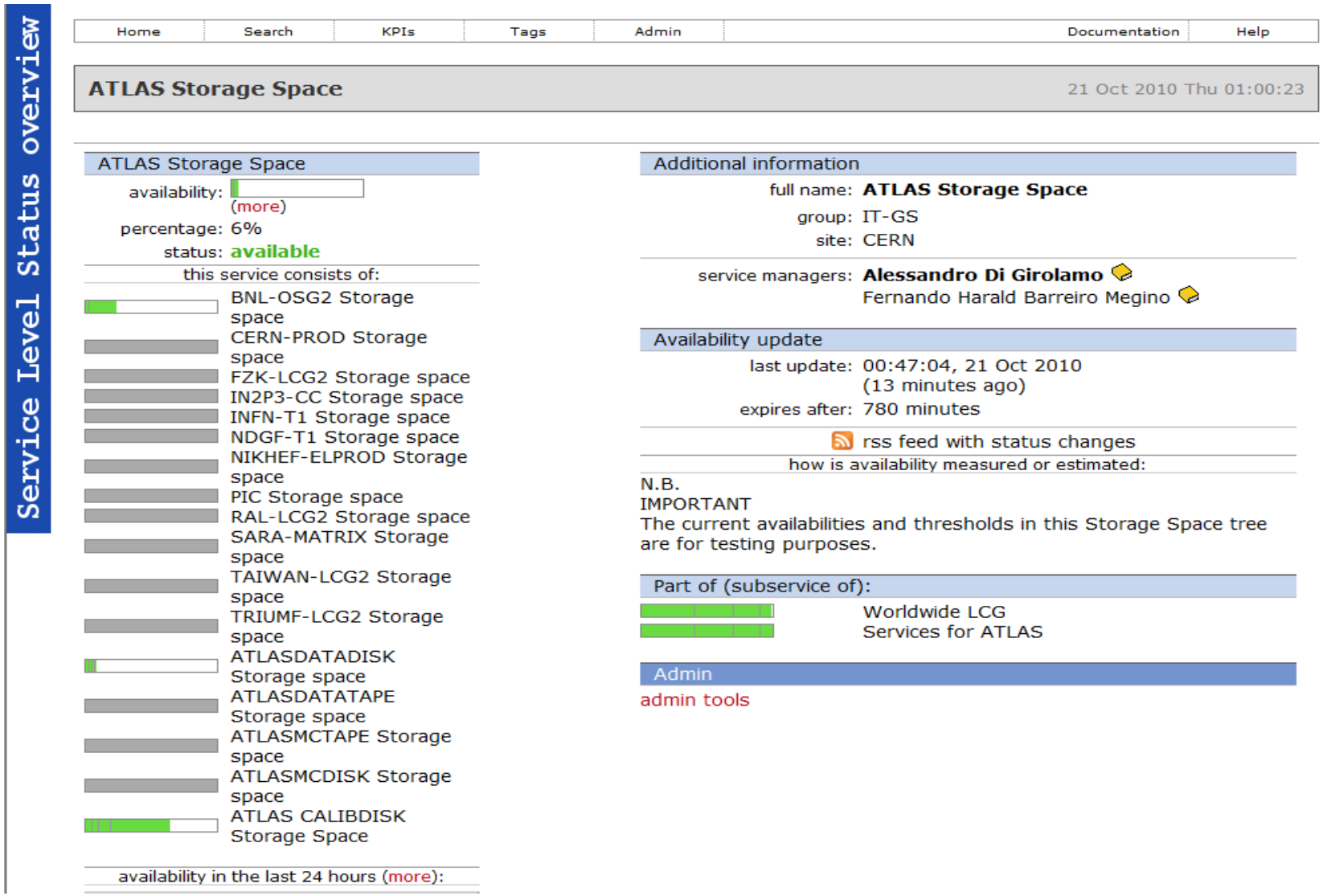
- provides current status and the time history of various computing services components



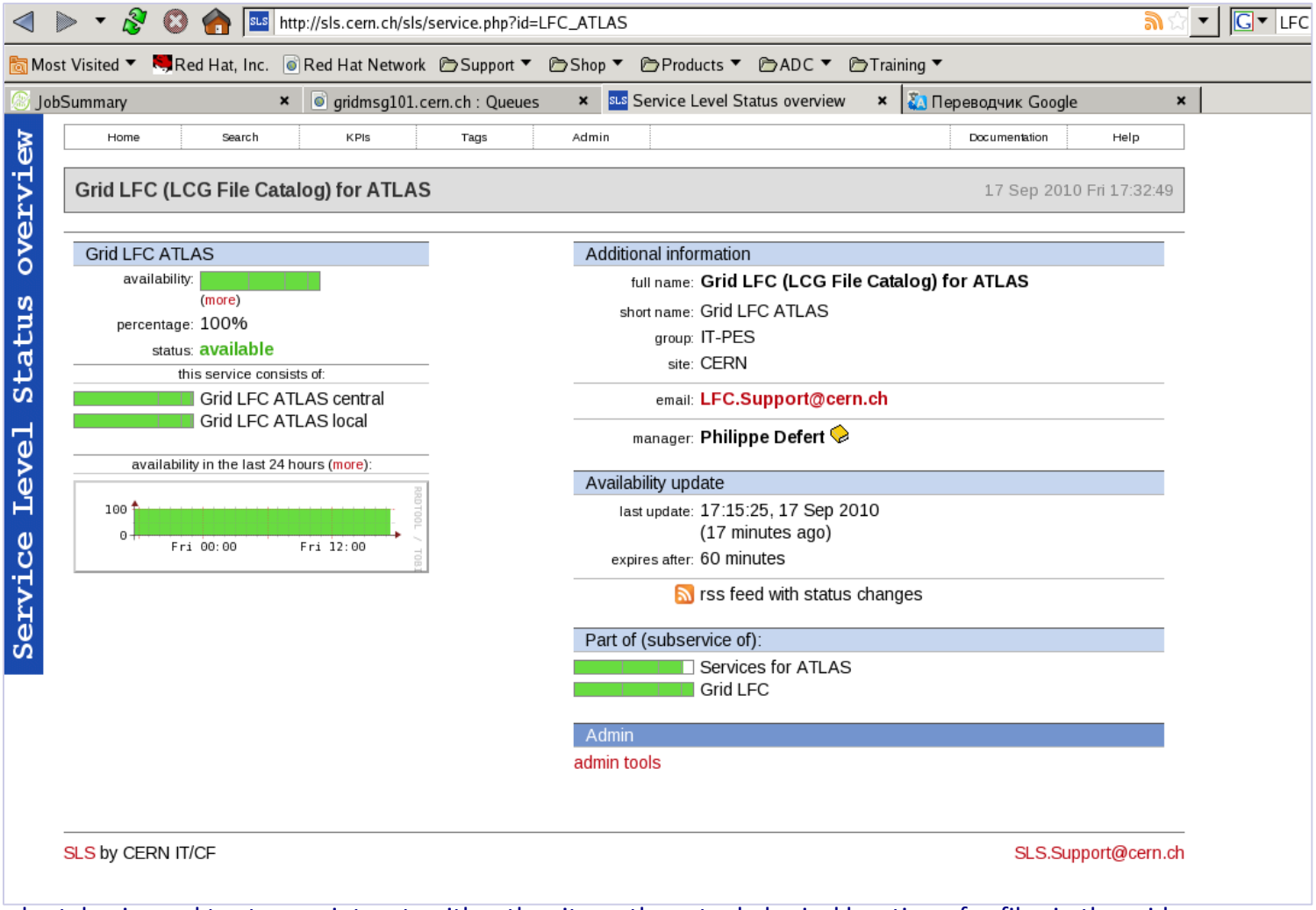
ADC DDM VOBOXES



Storage space monitor



LCG File Catalog



- central catalog is used to store pointers to either the site or the actual physical location of a files in the grid
- local catalog per site which stores mappings from logical to physical names for all ATLAS files at that particular site.

Where is this monitoring information?

- **http://dashb-atlas-data.cern.ch/dashboard/request.py/site**
- **http://dashb-atlas-ssb.cern.ch/dashboard/request.py/siteviewhome**
- **http://dashb-atlas-ssb.cern.ch/dashboard/request.py/siteview?view=Site_Status**
- **http://atlas-agis-dev.cern.ch/agis/calendar/?show_T1=1&showT2=1**
- **http://atladcops.cern.ch:8000/drmon/ftmon.html**
- **http://atladcops.cern.ch:8000/drmon/crmon.html**
- **http://dashboard10.cern.ch/dashboard/request.py/jobsummary**
- **http://dashboard10.cern.ch/index.html**
- **http://dashb-atlas-job-dev.cern.ch/dashboard/request.py/dailysummary**
- **http://sls.cern.ch/sls/service.php?id=atlas-SS10**
- **http://sls.cern.ch/sls/service.php?id=CERN-PROD_ATLASDATADISK**
- **http://sls.cern.ch/sls/service.php?id=storage_space**
- **http://dashb-atlas-prodsys.cern.ch/dashboard/request.py/overview**
- http://atlas.web.cern.ch/Atlas/tzero/prod1/monitoring/
- http://hammercloud.cern.ch/atlas
- http://dashb-atlas-sam.cern.ch/dashboard/request.py/latestresultssmry
- … and some more

What about aggregation of monitoring information?

Conclusions

- Monitoring of experiment's infrastructure usage gives the most relevant indication of the quality of the infrastructure
- Monitoring applications allow to facilitate the operational tasks and to ensure the steady improvement of the infrastructure quality
- Usage of the system is steadily growing, functionality is being extended
- Monitoring is under active development in ADC. We're converging on common solutions
    - E.g. the technology cocktail
        - New analysis dashboard and future PanDA monitoring will use common technology ”cocktail”(Django, JSON, jQuery…)
    - Message passing with MSG (ActiveMQ) and STOMP protocol.

Announcement

- Full day monitoring workshop next SW&C week (29 Nov-3 Dec at CERN)