RDIG in Simulation and Analysis of ALICE data from LHC

MEPHI JINR PNPI IHEP ITEP RRC-KI
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Alice

- ALICE - a journey to the beginning of the Universe. ALICE is the acronym for A Large Ion Collider Experiment, one of the largest experiments in the world devoted to research in the physics of matter at an infinitely small scale.

Computing tasks

- **T2 in ALICE Computing Model** - Simulation and end-user analysis, disk replicas of ESD's and AOD's
- **AliEn -** Entry point of ALICE to the GRID – both for data processing, simulation and data analysis
- **Aliroot -** is the name ALICE Off-line framework for simulation, reconstruction and analysis. It uses the **ROOT** system as the base on which the framework and all applications are built.
- **PROOF –** parallel analysis facility at the base of root

AliEn

- **AliEn** - **ALI**CE **En**vironment - is the Open Source Grid Framework built around other Open Source components using the combination of a Web Service and Distributed Agent Model.
  - Quick advances on the end-user interface (gshell)
  - Access to data – standard storage solutions CASTOR, xrootd .
  - Stability of provided resources at the computing centers

Alice tasks for RDIG in 2010 year

- Migration WN-s, and VO-boxes to SL5.x86_64 (gLite3.1 to gLite3.2)
- Migration from lcg-CE to CREAM-CE
- Update xrootd
- Update alien
- Stable operation of sites

gLite3.2

- gLite – middleware for grid computing, from EGEE project
- The gLite software is distributed as a set of different deployment modules / node types that can be installed separately
- gLite3.2 supported platforms: Scientific Linux 5 (SL5) x86_64, Debian 4 x86_64

Cream-CE

- The CREAM (Computing Resource Execution And Management) Service is a simple, lightweight service for job management operation at the Computing Element (CE) level.
- CREAM can be used by the Workload Management System (WMS), via the ICE service, or by a generic client, e.g. an end-user willing to directly submit jobs to a CREAM CE.

New xrootd version

- Easy monitoring of allocation, used and free disk volume at the base of Monalisa
- Big improvements visible in the ‘xrd’ command line interface
- xrd3cp: 3rd party copy available by default
- Fixed errors with ApMon processes

Alien.2-18

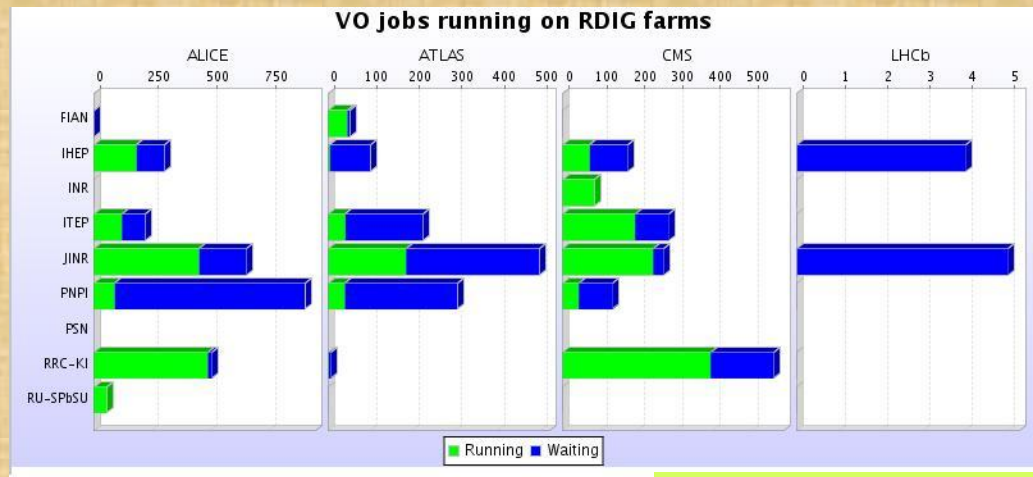
- Lots of improvements on xrootd
- CREAM-CE submission, and reduce the load on the VOBox
- Added torrent support for downloading files
- New (and simplified) transfer model

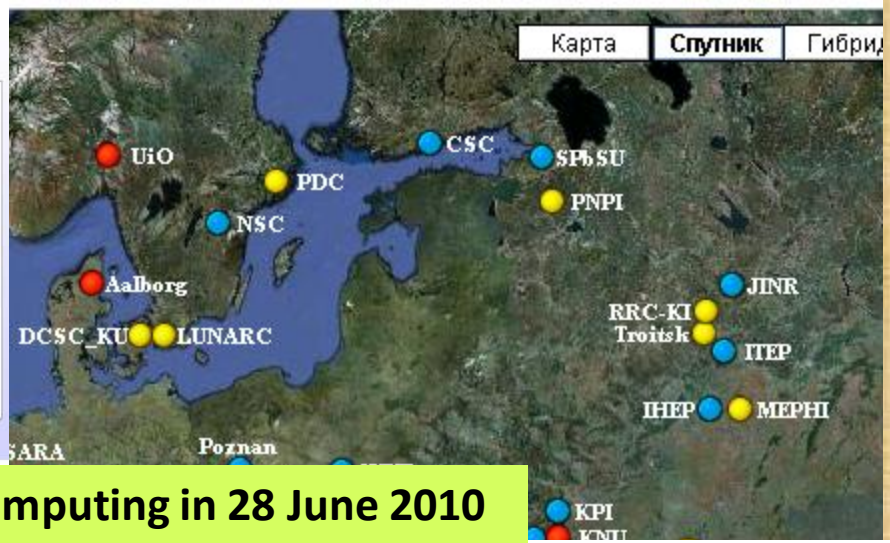
Installing ALICE Middleware on RDIG sites

Site name	Type SE	Monitoring SE	VO-BOX 1 (for LCG)	VO-BOX 2 (for CREAM)	WNs	Comments	Date (author)
IHEP	xrootd 20100510-1509_dbg		SL5	SL5	SL5	glite-ce-cream-1.12.1	28.06.2010 (Andrey Zarochentsev)
ITEP	xrootd 20100510-1509_dbg		SL5	SL5	SL5	glite-ce-cream-1.11.1-13.	09.06.2010 (Andrey Zarochentsev)
JINR	xrootd 20100510-1509_dbg		SL5	SL5	SL5	glite-ce-cream-1.11.1-16 glite-CREAM-3.2.1-0.x86_64	09.06.2009 (Andrey Zarochentsev)
MEPhI	xrootd 20100510-1509_dbg		SL5	SL5	SL5	glite-ce-cream-1.11.1-16 glite-CREAM-3.2.2-0.x86_64	28.06.2009 (Andrey Zarochentsev)
PNPI	xrootd 20100115.1117_dbg		SL5	no	SL5	glite-ce-cream-1.11.1-16 glite-CREAM-3.2.2-0.x86_64	06.04.2010 (Andrey Zarochentsev)
RRC-KI	xrootd 20100510-1509_dbg		SL5	SL5	SL5	glite-ce-cream-1.11.1-16	09.06.2010 (Andrey Zarochentsev)
SPbSU	xrootd 20100510-1509_dbg	xis	SL5	SL5	SL5	glite-ce-cream-1.11.1-16 glite-CREAM-3.2.1-0.x86_64	06.06.2010 (Andrey Zarochentsev)
Troitsk	xrootd 20100115.1117_dbg	xis	SL5	SL5	SL5	glite-ce-cream-1.11.1-16 glite-CREAM-3.2.1-0.x86_64	09.06.2010 (Andrey Zarochentsev)

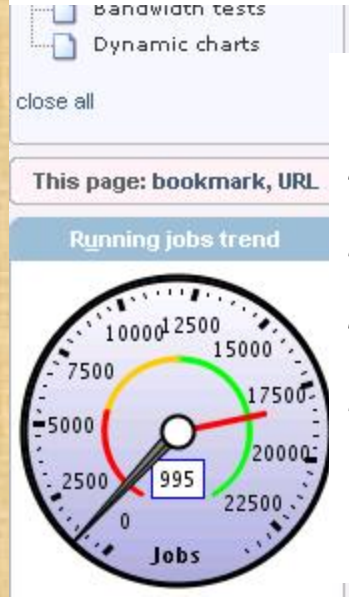
http://alice03.spbu.ru/alice/grid/lcg/

Present Status of distributed T2 -RDIG for ALICE needs



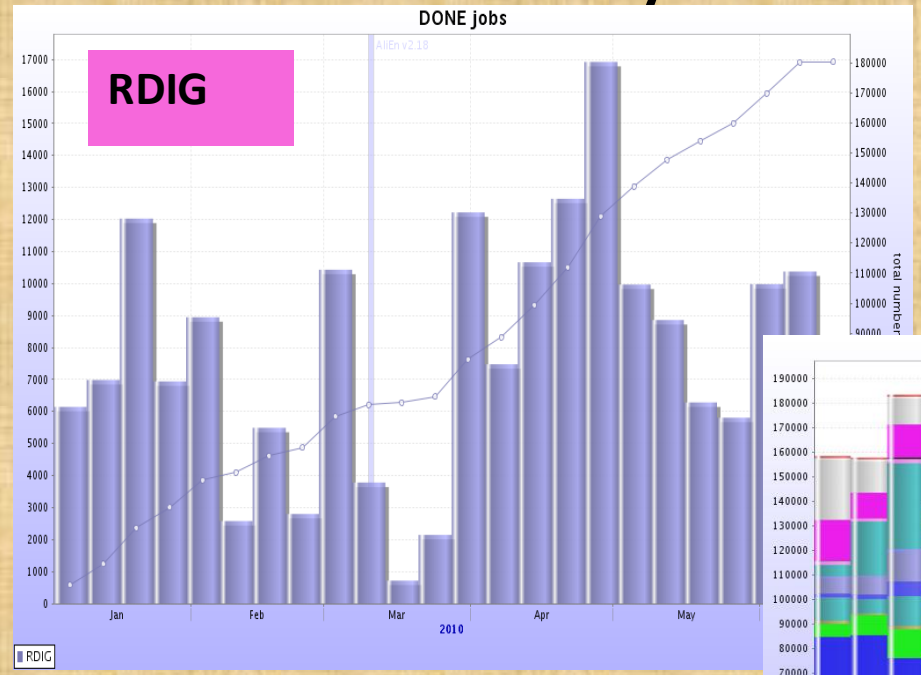


Status of ALICE computing in 28 June 2010

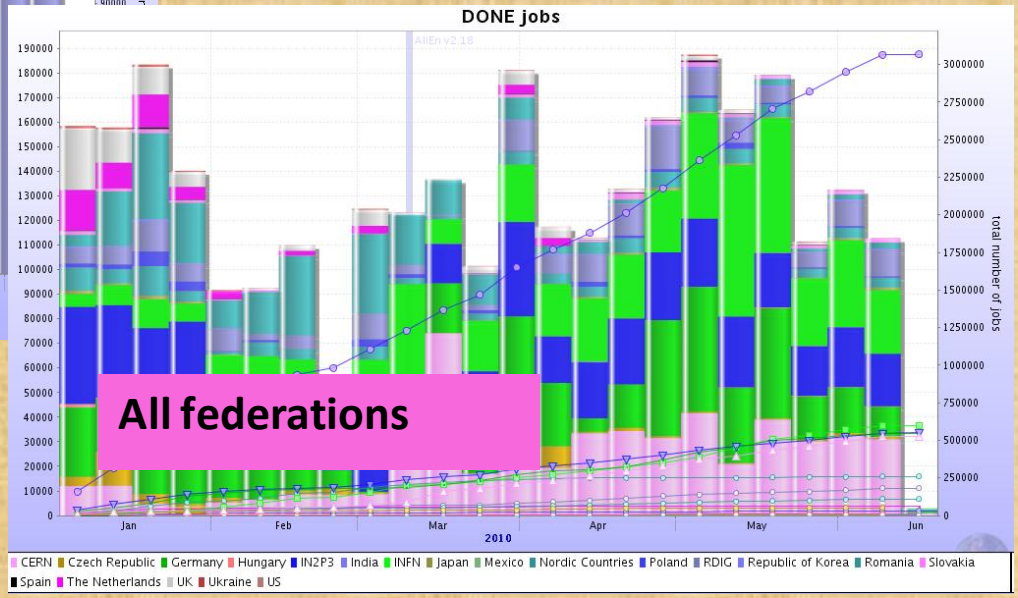


1. *All 8 sites are processing ALICE jobs under CREAM-CE only*
2. *All 8 sites have been updated to the Last AliEn version – 2.18*
3. *All 8 sites have have updated to last CREAM1.6*
4. *7 sites from 8 have been update to last xrootd version*
5. *RDIG CPU of 1541521.06 kSi2k were used from January till today by ALICE, 550 TB have been available in this time,16% (87 TB) were used.*
6. *23% of RDIG CPUs and 816 TB of RDIG are pledged for ALICE needs in 2010.*

Done Jobs (Simulated&Analysis) in 2010 year from grid



Contribution of RDIG to ALICE all Federation in processing analysis jobs is 3066554/180294=5,9%



http://alimonitor.cern.ch/display?page=federations/histogram_jobs_done

JINR proof cluster of parallel analysis- JRAF

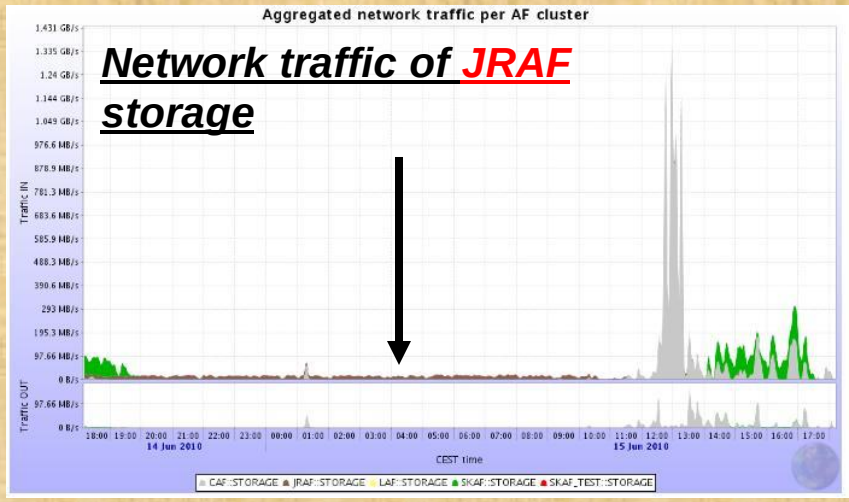
ALICE PROOF Clusters

Whatis INs about?

Cluster list

	Cluster					ROOT		Aggregated disk space			AF xrootd		xrootd
Name	Online	Status	Proof master	Workers	Users	Version	Debug	Total	Free	Used	Running	Latest	Version
1. CAF		Stable	alice-caf.cern.ch	208	2	v5-26-00b-6	v5-26-00b_4-dbg	80.86 TB	66.62 TB	14.24 TB	1.0.19	1.0.19	20100510-1509_dbg
2. HAF				-	-			-	-	-			
3. JRAF		Maintenance sin...	jraf.jinr.ru	8	0	v5-26-00b-6	v5-26-00b_4-dbg	2.272 TB	1.329 TB	965.7 GB	1.0.19	1.0.19	20100510-1509_dbg
4. LAF				-	-			0	0	0			20100421-1008_dbg
5. SKAF		Maintenance sin...	skaf.saske.sk	60	0	v5-26-00b-6	v5-26-00b_4-dbg	11.95 TB	10.45 TB	1.499 TB	1.0.19	1.0.19	20100510-1509_dbg
6. SKAF_SE				-	-			-	-	-			
7. SKAF_TEST		Maintenance sin...	skaf-test.saske.sk	4	0	v5-26-00b-6	v5-26-00b_4-dbg	815.9 GB	773.6 GB	42.31 GB	1.0.19	1.0.19	20100510-1509_dbg
Total				280	2			95.88 TB	79.16 TB	16.72 TB			

Now JRAF is a part of common ALICE Analysis Facility –AAF



Common support of the most modern version of packages needed for the proper analysis activity of each cluster from AAF. Main used packades –xrootd, PROOF, ROOT , AliEn and AliRoot .

Example of ESD and AOD data transport to JRAF

Questions?