

JRAF – the PROOF Facility for ALICE

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Abstract. The JINR-Russia Analysis Facility (JRAF) is the PROOF facility for ALICE in Russia. The aim of this facility is an analysis processing of simulated and experimental data in parallel runs. JRAF today is the small PROOF cluster having only 8 working nodes and limited disk space. This cluster could be used mostly as test cluster and for processing of special tasks analysis.

The ALICE is one of the four LHC experiments at CERN. ALICE (A Large Ion Collider Experiment) is the only detector dedicated to the study of nucleus-nucleus collisions at LHC. It is investigating the physics of strongly interacting matter at extreme energy densities, where the formation of a new phase of matter, the quark-gluon plasma (QGP) is expected. The Grid technology of development and analysis data is adequate in nova days, only, for the fast obtained of the results with good statistics. The PROOF based analysis and calibration, main tasks of PROOF facility at ALICE, are conceptually different from analysis and calibration on Grid. Last one is based at largest available amount of processing data. So it gives the most statistically well-to-do results. But these results will not be available in a few minutes.

PROOF clusters is using today for: – Prompt analysis of proton-proton data,
– Pilot analysis of Pb-Pb data,
– Calibration & Alignment,
where fast response time is the key [1, 2]. The ALICE Analysis Facility is a distributed PROOF cluster used for interactive parallel data processing. There is combined ROOT's package PROOF, with settings XROOTD (ALICE SE), which is responsible for working with data, where the PackMan ensure the timeliness software across a cluster. This new type of PROOF cluster was setup at JINR in Dubna and is called JRAF (JINR Russia Analysis Facilities), see Fig 1.

In order to analyze data, it is necessary to have the data on the storage space PROOF cluster. In the case of AAF is storage directly to a local drive of each computer in the cluster. It was necessary to ensure copy data from Alien to the cluster catalogue. To accomplish this task it was necessary to create so-called data-set, which is basically a list of files. Data are divided into two groups:

- a) official (real data, data from Monte-Carlo simulation),
- b) user datasets (datasets created by users).

Cluster list												
Name	Online	Status	Cluster			ROOT	Aggregated disk space			AF xrootd		xrootd
			Proof master	Workers	Users	Version	Total	Free	Used	Running	Latest	Version
1. CAF		Stable	alice-caf.cern.ch	114	0	v5-30-02	159.8 TB	8.943 TB	150.8 TB	1.0.43	1.0.43	20100510-1509_dbg
2. CAF_TEST				-	-	-	-	-	-	-	-	-
3. JRAF		Maintenance sin...	jraf.jinr.ru	8	0	v5-30-02	2.014 TB	438.8 GB	1.586 TB	1.0.43	1.0.43	20100510-1509_dbg
4. KIAF		Stable	kiaf.sdfarm.kr	96	0	v5-30-02	171.9 TB	158.6 TB	13.31 TB	1.0.43	1.0.43	20100510-1509_dbg
5. SAF		Maintenance sin...	nansafmaster.in2p3.fr	48	0	v5-30-02	12.07 TB	3.197 TB	8.875 TB	1.0.43	1.0.43	20100510-1509_dbg
6. SKAF		Stable	skaf.saske.sk	60	0	v5-30-02	53.72 TB	1.434 TB	52.29 TB	1.0.43	1.0.43	20100510-1509_dbg
7. SKAF_TEST				-	-	-	-	-	-	-	-	-
8. TAF				-	-	-	-	-	-	-	-	-
Total				326	0		399.5 TB	172.6 TB	226.9 TB			

Figure 1: ALICE PROOF Clusters

PROOF facility lets have results very fast at restricted statistics located at disks of workers, thus allowing very fast development cycles. The new type of ALICE Analysis Facility (AAF) running

The one of the advantages is, that user can list all the active/waiting/finished PROOF sessions. If the PROOF cluster is overloaded, than he connect to another one. He can just disconnect and connect

later to retrieve the output. If the PROOF cluster has more than specific number of users, the PROOF master will reject the new requests and user can connect later and choose another AAF proof cluster. The system administrator can kill/suspend the sessions in the queue. JRAF is the PROOF cluster of a 8 cores box. There is 2 TB what could be used for data-set. So this minimal configuration of JRAF lets to do mainly test of AAF software and very limited number of analysis for which low disk space of JRAF would be enough [3-5]. There has been found the funding for additional resources what have will be used for JRAF upgrade. Today we are waiting more powerful apparatus for JRAF. There will be added 4 machines with 48 cores totally and 24 TB of disk space.

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