AF operations

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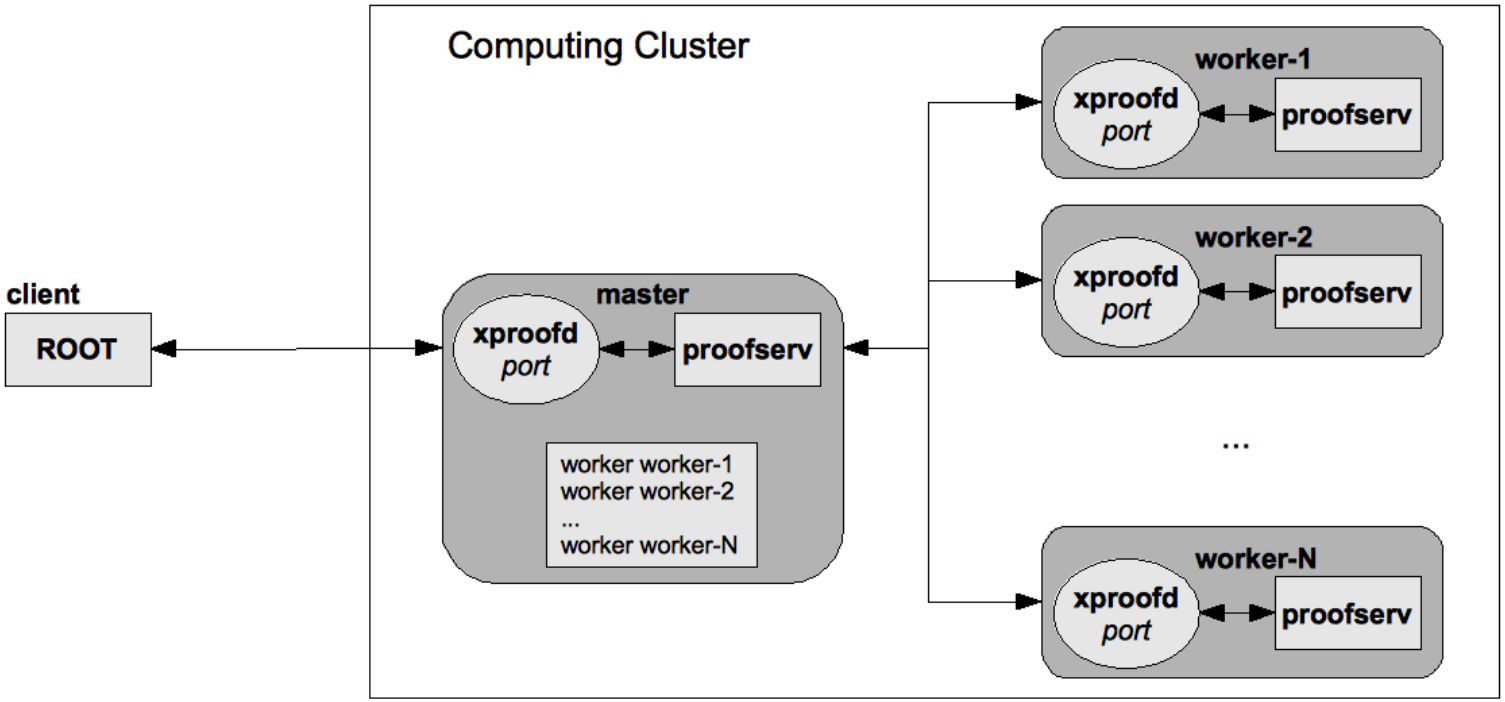
AAF - ALICE Analysis Facilities

- ALICE Analysis Facility (AAF) is a proof-enabled cluster with aggregated storage and ALICE software installed.
- AAFs are used for prompt analysis of pp and Pb-Pb data, as well as for prompt reconstruction of limited number of events per run by Offline shifters (CERN Analysis Facility, CAF).
- AAFs are not substitution of grid sites – large-scale user analysis should be run on grid.

AAF structure?



AAF - PROOF cluster requirements

Master

- 32 or more GB RAM
- 4 or 8 core machine
- 50 GB disk space for software (depends on size of packages)

Worker

- 3-4 GB RAM per core
- N disks (no RAID) for data
  - CAF (3 and 4 disk per node)
  - SKAF (2 disk per node)
  - KIAF (8 disk per node)
- 50 GB disk space for software (depends on size of packages)

List of AAF

	Cluster					ROOT	Aggregated disk space			AF xrootd		xrootd
Name	Online	Status	Proof master	Workers	Users	Version	Total	Free	Used	Running	Latest	Version
1. CAF		Stable	alice-caf.cern.ch	116	0	v5-30-03-1	162.1 TB	10.89 TB	151.2 TB	1.0.43	1.0.43	20100510-1509_dbg
2. KIAF		Stable	kiaf.sdfarm.kr	96	0	v5-30-03-1	171.9 TB	119.1 TB	52.8 TB	1.0.43	1.0.43	20100510-1509_dbg
3. LAF				-	-		9.413 TB	7.271 TB	2.142 TB			20100510-1509_dbg
4. SAF		Maintenance sin...	nansafmaster.in2p3.fr	48	0	v5-30-03-1	12.07 TB	4.581 TB	7.491 TB	1.0.43	1.0.43	20100510-1509_dbg
5. SKAF		Stable	skaf.saske.sk	60	0	v5-30-03-1	53.72 TB	2.751 TB	50.97 TB	1.0.43	1.0.43	20100510-1509_dbg
Total				**320**	**0**		**409.2 TB**	**144.6 TB**	**264.6 TB**			

AAF - installation

- Register master's host certificate in alien (as proof user)
- Visit and register your PROOF cluster at http://aaf.cern.ch
- Genarete config file aaf.cf at http://aaf.cern.ch
- Follow installation http://aaf.cern.ch/node/47
- Report bugs at our savannah - https://savannah.cern.ch/projects/aaf
- Or test NEW PEAC-AAF installation (alpha version - DEMO)

What is PEAC?

PEAC - Proof Enabled Analysis Cluster

- experiment independent
- common PROOF setup using PoD
- fast and easy installation
- software managment and software distribution to workers
- data managment using xrootd
- data staging using afdsmgrd
- cluster monitoring by monalisa
- PROOF seting is based on AAF setup

PEAC and PoD

PEAC is impemented to use all plugins from PoD

- For STATIC proof cluster - PoD ssh plugin is used
  - without password ssh
  - xproofd will be started (when ROOT is present on master and workers)
  - worker automatic restart
  - executing commands on workers (PEAC is using pssh for now)

With PEAC you will have for free.

- Software managment
  - PEAC sw managment
  - for ALICE - AliEn
- Data managment
  - xrootd SE on worker machines (use local disks to cache data)
  - AliEn SE elements (process remotely)
- Data staging using afdsmgrd (Dario Berzano)
  - data are cached to xrootd on workers
  - data are cached on external storage

PEAC PROOF settings

- ALICE plugin for PEAC will use same proof settings as current AAF
- NEW - multiuser option - only ONE (proof) user needs to be on workers
- NO 'root' access to machines is needed
- for ALICE same security as AAF (certificate + alien ldap)
- multiple proof config files can be joined

Software managment

- compile + binary is distributed to workes (both will be shown in DEMO)
- *.pbuild is script used to installation instruction
- binary can be copied from xrd Global sw redirector
- xrdcp (extreme copy) is going to be used for file distribution
- Different VO_*
  - VO_PEAC
  - VO_ALICE
  - VO_ALICE_DEV
  - VO_MY
- Each VO will own rsync server of *.pbuilds

Example of pbuild

- pbuild - Proof build script
  - configure, make, make install

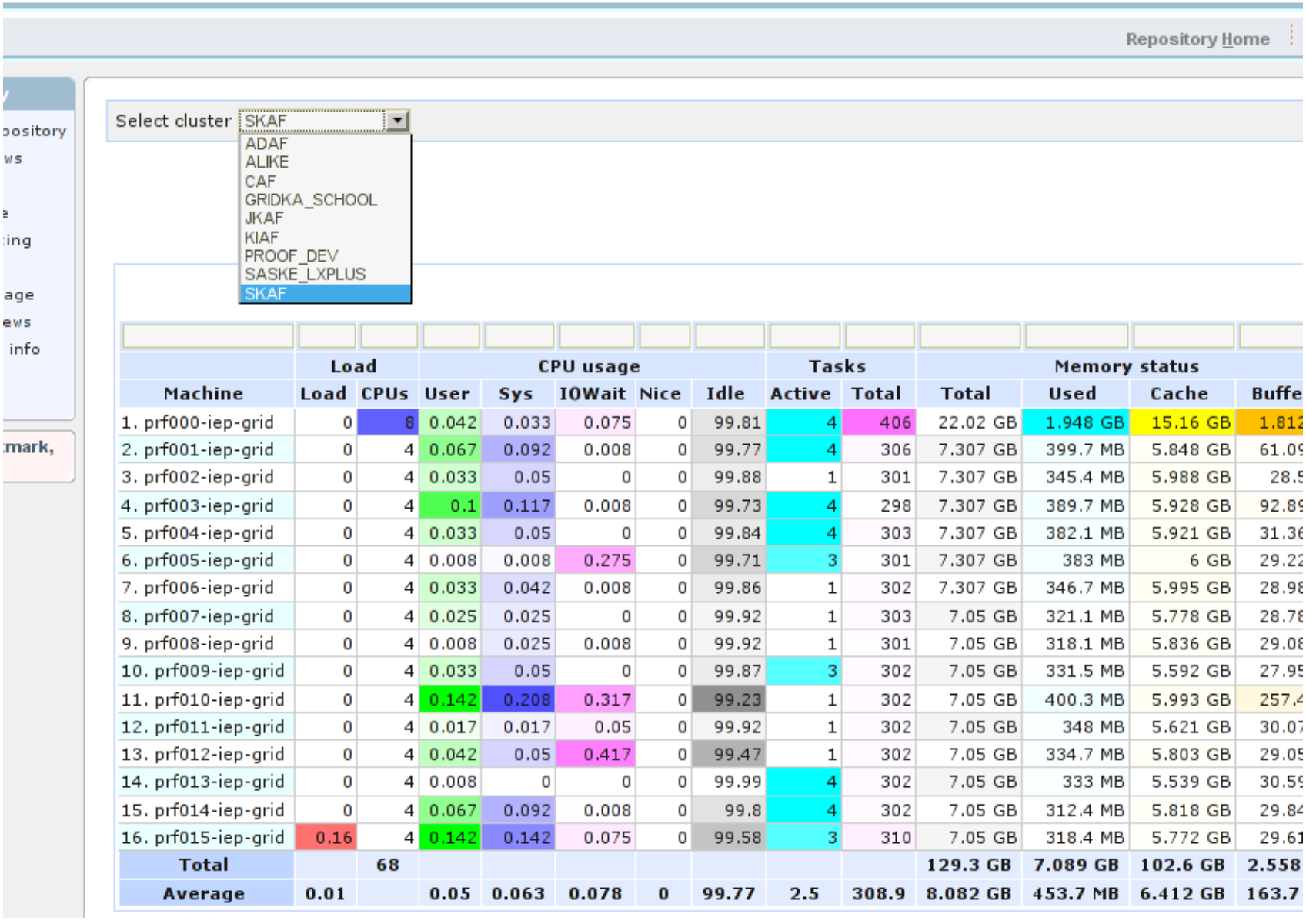
structure of pbuild

```
function PEAC_download() {
  ...
}

function PEAC_configure() {
  ...
}

function PEAC_make() {
  ...
}
```

Data managment

- Xrootd
  - redirector + dataserver model
  - Xrootd's frm scripts will do staging.
  - xrd-dm plugin will copy files from different sources
    - ALICE - AliEn (root://rdr//alice/....)
    - ALTLAS - ??? (root://rdr//atlas/....)
    - Other - ??? (root://rdr//my_experiment/....)

Monalisa monitoring



	Load		CPU usage					Tasks		Memory status			
Machine	Load	CPUs	User	Sys	IOWait	Nice	Idle	Active	Total	Total	Used	Cache	Buffe
1. prf000-iep-grid	0	8	0.042	0.033	0.075	0	99.81	4	406	22.02 GB	1.948 GB	15.16 GB	1.812
2. prf001-iep-grid	0	4	0.067	0.092	0.008	0	99.77	4	306	7.307 GB	399.7 MB	5.848 GB	61.09
3. prf002-iep-grid	0	4	0.033	0.05	0	0	99.88	1	301	7.307 GB	345.4 MB	5.988 GB	28.5
4. prf003-iep-grid	0	4	0.1	0.117	0.008	0	99.73	4	298	7.307 GB	389.7 MB	5.928 GB	92.89
5. prf004-iep-grid	0	4	0.033	0.05	0	0	99.84	4	303	7.307 GB	382.1 MB	5.921 GB	31.36
6. prf005-iep-grid	0	4	0.008	0.008	0.275	0	99.71	3	301	7.307 GB	383 MB	6 GB	29.22
7. prf006-iep-grid	0	4	0.033	0.042	0.008	0	99.86	1	302	7.307 GB	346.7 MB	5.995 GB	28.98
8. prf007-iep-grid	0	4	0.025	0.025	0	0	99.92	1	303	7.05 GB	321.1 MB	5.778 GB	28.78
9. prf008-iep-grid	0	4	0.008	0.025	0.008	0	99.92	1	301	7.05 GB	318.1 MB	5.836 GB	29.08
10. prf009-iep-grid	0	4	0.033	0.05	0	0	99.87	3	302	7.05 GB	331.5 MB	5.592 GB	27.95
11. prf010-iep-grid	0	4	0.142	0.208	0.317	0	99.23	1	302	7.05 GB	400.3 MB	5.993 GB	257.4
12. prf011-iep-grid	0	4	0.017	0.017	0.05	0	99.92	1	302	7.05 GB	348 MB	5.621 GB	30.07
13. prf012-iep-grid	0	4	0.042	0.05	0.417	0	99.47	1	302	7.05 GB	334.7 MB	5.803 GB	29.05
14. prf013-iep-grid	0	4	0.008	0	0	0	99.99	4	302	7.05 GB	333 MB	5.539 GB	30.59
15. prf014-iep-grid	0	4	0.067	0.092	0.008	0	99.8	4	302	7.05 GB	312.4 MB	5.818 GB	29.84
16. prf015-iep-grid	0.16	4	0.142	0.142	0.075	0	99.58	3	310	7.05 GB	318.4 MB	5.772 GB	29.61
Total		**68**								**129.3 GB**	**7.089 GB**	**102.6 GB**	**2.558**
Average	**0.01**		**0.05**	**0.063**	**0.078**	**0**	**99.77**	**2.5**	**308.9**	**8.082 GB**	**453.7 MB**	**6.412 GB**	**163.7**

PEAC TODO

- XROOTD setup for more then 64 data servers
- Port xrddm to FRM scripts
- Documentation (First version at http://mon1.saske.sk/peac/doc)
- Monitor PEAC specific (version, packages installed, ...)

PEAC alpha version

- You can now test PEAC alpha version
  - tested on SL5, fedora, ubuntu and gentoo
  - DEMO

DEMO