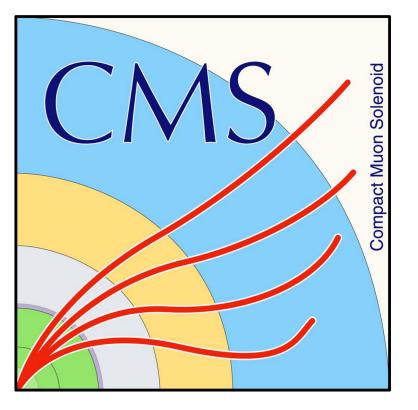


Efficient monitoring of CRAB3 jobs at CMS



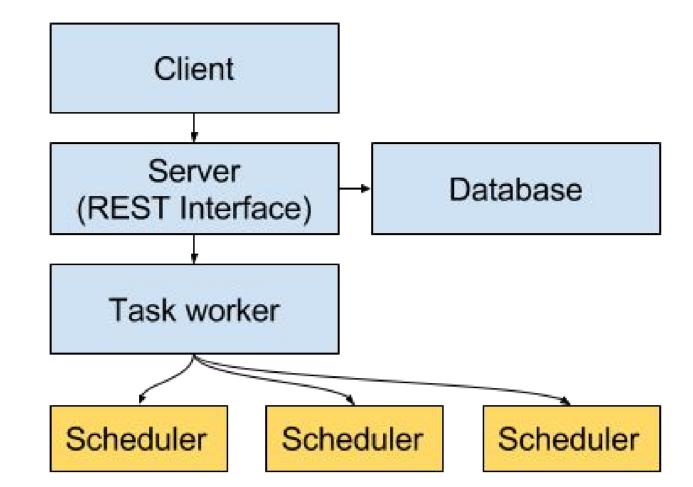


What is CRAB3?

CRAB3 is a tool used by more than 500 users worldwide for distributed Grid analysis of CMS data. Users can submit sets of Grid jobs with similar requirements (tasks) with a single user request. CRAB3 uses a client-server architecture, where a lightweight client, a server, and ancillary services work together and are maintained by CMS operators at CERN.

- CRAB Server provides a **REST Interface** which it uses to communicate with the other components.
- Task worker is a queue system responsible for processing tasks.
- Information about tasks are stored in a task database.

Architecture



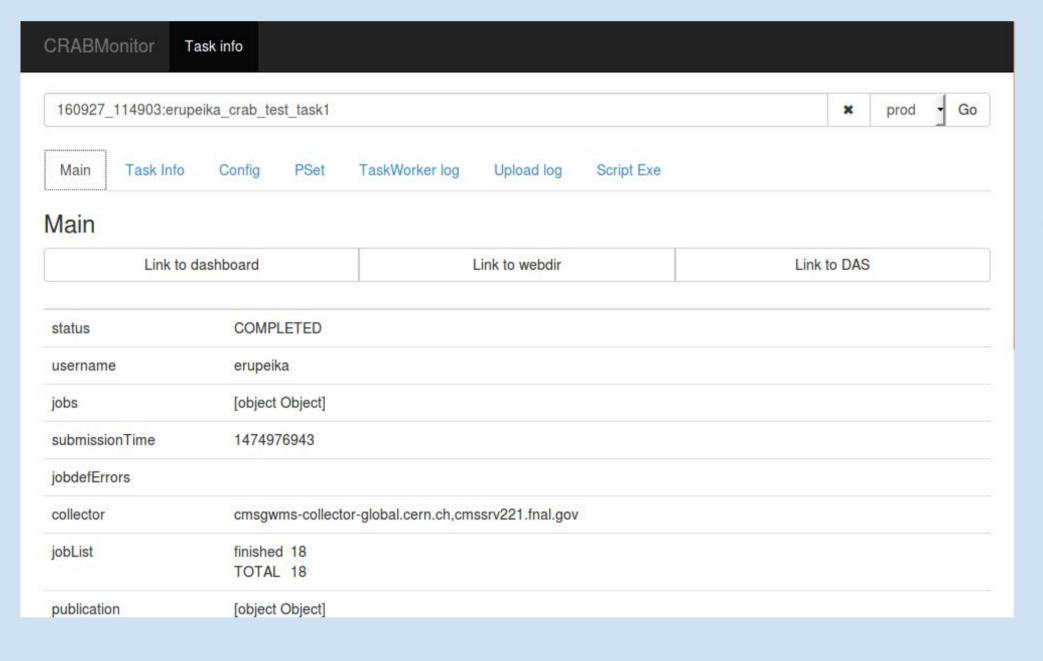
One of CRAB3 operator's day-to-day responsibilities is debugging user tasks (upon user request). More than 8000 tasks are submitted every week.

Number of tasks



CRABMon

CRABMon is a javascript-based tool developed in-house to allow operators easier access to information related to a particular task. It is available on cmsweb.cern.ch to every CMS user.



Main view providing some general information about a task (such as task and job statuses) and links to external sites to complement available information.

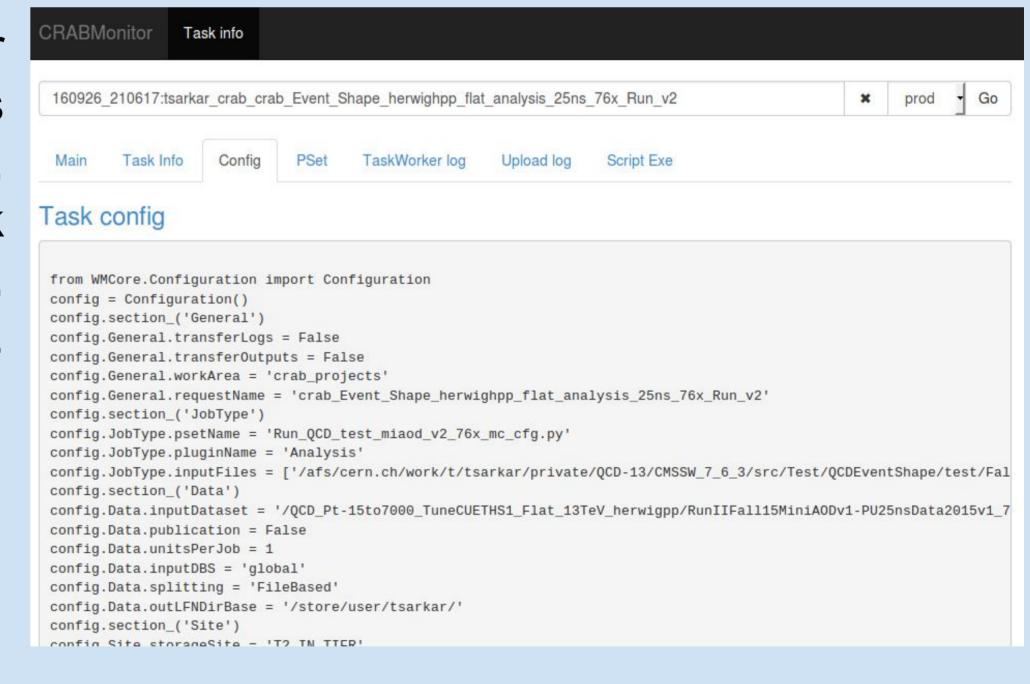
way to access the information stored in the task database (helps avoid writing SQL queries by hand).

Provides an easy	CRABMonitor Task info		
way to access the	160920_125414:rmaciula_crab_	PSST_1474376048	≭ prod √ Go
formation stored in	Main Task Info Config	PSet TaskWorker log Upload log Script Exe	
the task database	Task Info		
halps avoid writing	Name	Value	
helps avoid writing	tm_taskname	160920_125414:rmaciula_crab_PSST_1474376048	
SQL queries by	panda_jobset_id	None	
JUL quelles by	tm_task_status	SUBMITTED	
hand).	tm_start_time	2016-09-20 12:54:14.543540	
mana).	tm_start_injection	None	
	tm_end_injection	2016-09-20 12:57:03.886824	
	tm_task_failure	None	
	tm_job_sw	CMSSW_7_3_5_patch2	
	tm_job_arch	slc6_amd64_gcc491	
	tm_input_dataset	None	

RABMonitor Task info prod - Go 160927_114903:erupeika_crab_test_task1 TaskWorker log Upload log Script Exe TaskWorker log 2016-09-27 13:49:12,784:DEBUG:Worker:Process-9: Starting <function handleNewTask at 0x7f34db60de60> on 160927_114903 2016-09-27 13:49:16,124:DEBUG:Handler:Starting <TaskWorker.Actions.MyProxyLogon.MyProxyLogon object at 0x7f34d3b094 2016-09-27 13:49:17,343:DEBUG:Proxy:Executing env -i sh -c 'env X509_USER_PR0XY=/data/certs/creds/a41b46b7b59e9858006416f98d1540f9ddf4d646 voms-proxyoutput : /cms/Role=NULL/Capability=NULL error: retcode : 2016-09-27 13:49:17,998:DEBUG:Proxy:Executing env -i sh -c 'unset X509_USER_CERT X509_USER_KEY && env X509_USER_CERT=/data/certs/hostcert.pem X509_USER output : A credential has been received for user 0b82ed1646b6f86f965d340476cf29c2a03fd1d8 in /data/certs/creds/a41b retcode : 0 2016-09-27 13:49:18,147:DEBUG:Proxy:Executing : env -i sh -c 'grid-proxy-info -file /data/certs/creds/a41b46b7b59e9858006416f98d1540f9ddf4d646.32008 -tim output : 60479

Task worker logs for a specific task. These allow debugging problems that happen during task submission.

Access to user configuration files (client configuration, framework configuration, ancillary files).

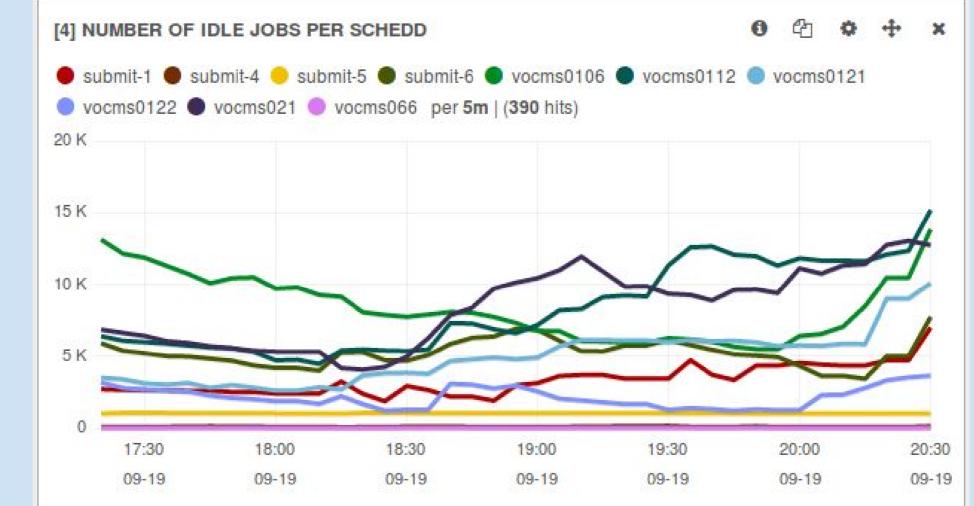


CRAB Kibana dashboard

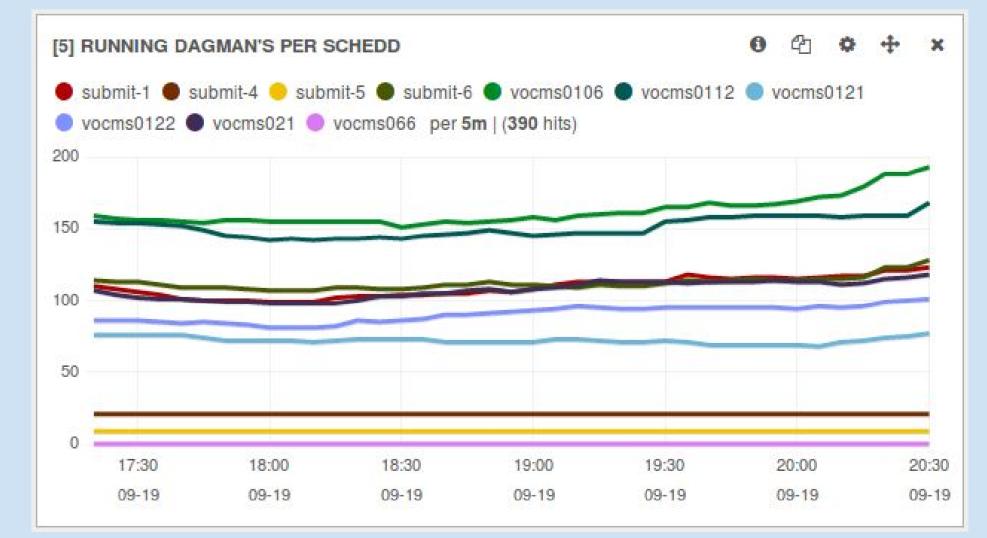
Set of kibana views deployed on the CERN Kibana instance that helps CRAB3 operators monitor the core components of the infrastructure (Task worker, schedulers, etc.) in real time.



Charts that show the number of tasks per state help identify problems with the task worker since a high number of tasks in non-final states indicates it is not processing tasks.



Monitor the number of idle jobs for each scheduler to make sure they are being processed.



Schedulers have finite resources (RAM, CPU, etc.) To prevent unexpected behavior, limits on the number of running jobs and tasks are set according to scheduler capabilities.