Effective HTCondor-based monitoring system for CMS

Abstract

The CMS experiment at LHC relies on HTCondor and glideinWMS as its primary batch and pilot-based Grid provisioning systems. Given the scale of the global queue in CMS, the operators found it increasingly difficult to monitor the pool to find problems and fix them. The operators had to rely on several different web pages, with several different levels of information, and sifting tirelessly through log files in order to monitor the pool completely. Therefore, coming up with a suitable monitoring system was one of the crucial items before the beginning of the LHC Run 2 to ensure early detection of issues and to give a good overview of the whole pool. Our new monitoring page utilizes the HTCondor ClassAd information to provide a complete picture of the whole submission infrastructure in CMS. The monitoring page includes useful information from HTCondor schedulers, central managers, the glideinWMS frontend, and factories. It also incorporates information about users and tasks making it easy for operators to provide support and debug issues.

Implementation details

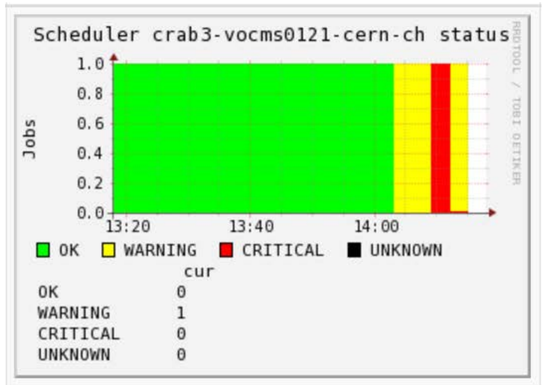
- *HTCondor + HTCondor python bindings* for retrieving all Classads from Schedulers, Collectors, Factories;
- *Python-genshi* – Generate HTML templates;
- *httpd + mod_wsgi* – Apache HTTP Server;
- *RRDtool* – data logging for time series data.

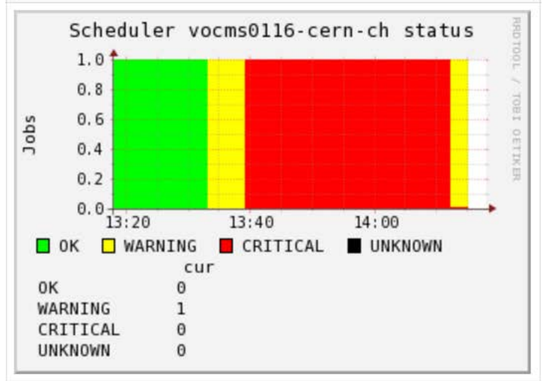
	T1s	T2s	T3s
Num of Sites	7	56	87
Total Cores	~40k	~167k	~6k

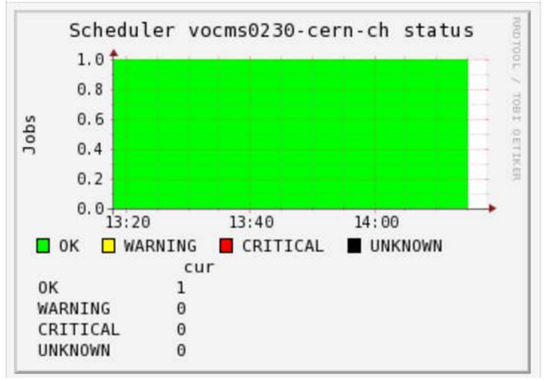
Complexity of monitoring

Dashboard link
Hide Debug Information

WallTime	Memory	Running	Idle	Scheduler	Desired Sites	Warnings
300	2500	26	0	cmssrv219.fnal.gov	2	
400	2500	132	0	cmsgwms-submit2.fnal.gov	2	
500	2500	439	339	cmssrv219.fnal.gov	2	
100	2500	5	0	cmssrv219.fnal.gov	2	
200	2500	19	0	cmssrv219.fnal.gov	2	
300	2500	3	0	cmssrv219.fnal.gov	3	
300	2500	20	0	cmssrv219.fnal.gov	3	
400	2500	26	0	cmssrv219.fnal.gov	2	
200	2500	40	0	cmsgwms-submit1.fnal.gov	2	
400	2500	14	0	cmsgwms-submit1.fnal.gov	3	
500	2500	241	0	cmsgwms-submit1.fnal.gov	2	
400	2500	1	0	cmssrv219.fnal.gov	3	
500	2500	1115	2027	cmsgwms-submit2.fnal.gov	2	
500	2500	478	45	cmssrv219.fnal.gov	2	
200	2500	27	0	cmsgwms-submit2.fnal.gov	2	
200	2500	3	0	cmsgwms-submit2.fnal.gov	2	
300	2500	92	2	cmssrv219.fnal.gov	2	
500	2500	413	1478	cmssrv219.fnal.gov	2	
400	2500	10	0	cmsgwms-submit2.fnal.gov	2	
100	2500	11	0	cmsgwms-submit2.fnal.gov	2	
400	2500	23	0	cmsgwms-submit2.fnal.gov	3	
300	2500	4	0	cmsgwms-submit1.fnal.gov	2	
400	2500	1	0	cmssrv219.fnal.gov	3	
100	2500	8	0	cmsgwms-submit2.fnal.gov	3	
100	2500	1	0	cmssrv219.fnal.gov	3	
100	2500	12	0	cmssrv219.fnal.gov	2	
100	2500	7	0	cmsgwms-submit2.fnal.gov	2	
500	2500	3	0	cmssrv219.fnal.gov	3	
400	2500	6	0	cmsgwms-submit2.fnal.gov	3	
200	2500	1	0	cmssrv219.fnal.gov	2	





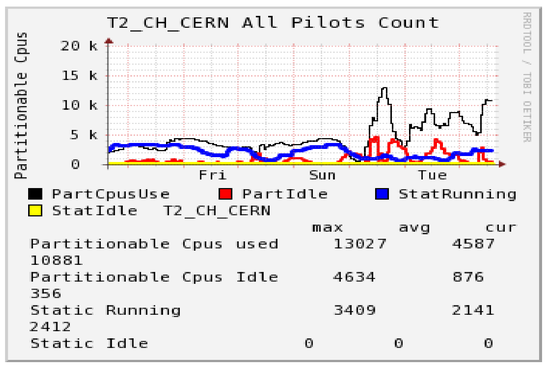


Partitionable Pilots Info

Counter

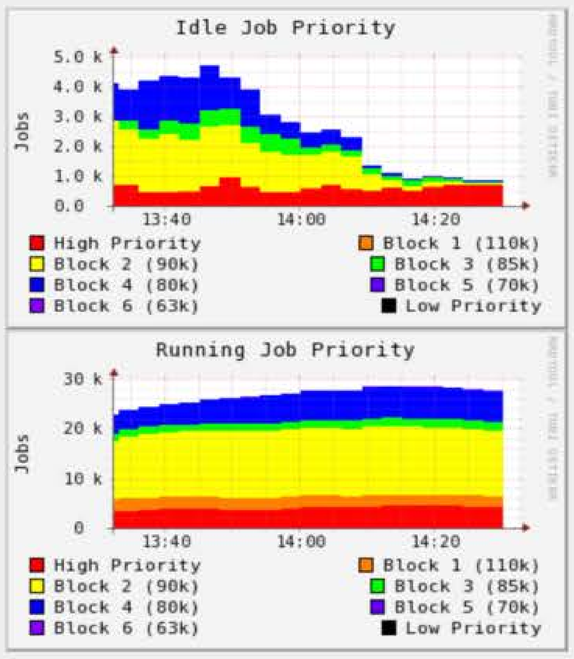
Counter	Total Memory Available	Memory Left	Total Cpus	Cpus Free	Retire Time
43	20 240	2 320	8	0	8/26/2016, 10:10:00 PM
40	20 240	2 832	8	0	8/26/2016, 10:10:00 PM
28	20 240	3 344	8	0	8/26/2016, 10:10:00 PM
26	20 240	2 320	8	0	8/26/2016, 10:00:00 PM
24	20 240	3 856	8	0	8/26/2016, 10:00:00 PM
23	20 240	3 344	8	0	8/26/2016, 10:20:00 PM
21	20 240	2 832	8	0	8/26/2016, 10:00:00 PM
19	20 240	1 808	8	0	8/26/2016, 10:10:00 PM
19	20 240	2 320	8	0	8/26/2016, 10:20:00 PM
18	20 240	3 344	8	0	8/26/2016, 10:00:00 PM

1 2 10 50 55

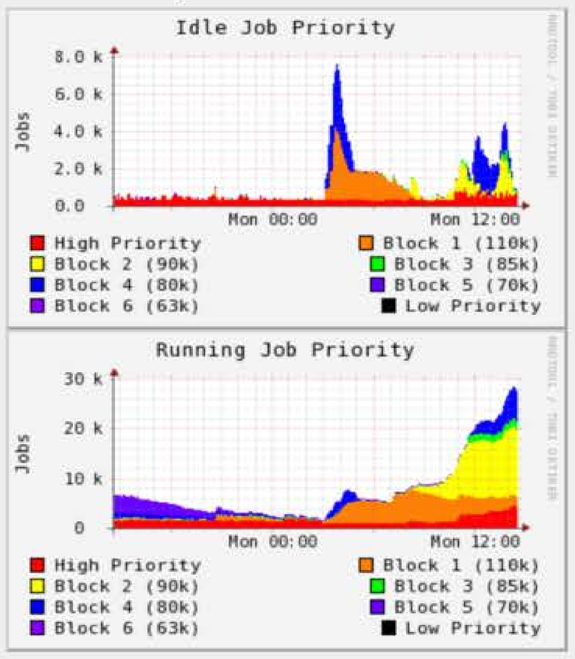


Priority Type	Running	Idle
High Priority	4234	714
Block 1 (110k)	2175	2
Block 2 (90k)	13052	37
Block 3 (85k)	1793	38
Block 4 (80k)	6132	51
Block 5 (70k)	19	0

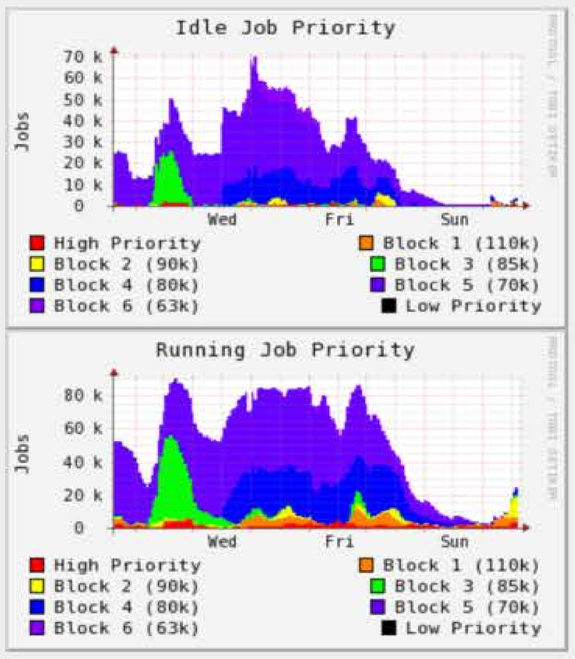
Last Hour



Last Day



Last Week



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