



Validation of SAM3 monitoring data (availability & reliability of services)

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Introduction

The new Site Usability Monitor SAM3 based on the tests results is under development  the task is to validate Availability/Reliability calculation

 for that is reasonable to compare monitoring data from SUM (old) and SAM3 (new) systems

SUM:

- <http://dashb-cms-sum.cern.ch/>
- <http://dashb-atlas-sum.cern.ch/>
- <http://dashb-lhcb-sum.cern.ch/>
- <http://dashb-alice-sum.cern.ch/>

SAM3:

- <http://wlcg-sam-cms.cern.ch/>
- <http://wlcg-sam-atlas.cern.ch/>
- <http://wlcg-sam-lhcb.cern.ch/>
- <http://wlcg-sam-alice.cern.ch/>

Availability/reliability algorithms

- Definition taken from current SAM
 - $\text{Availability} = \text{Up period} / (\text{Up period} + \text{Down period} + \text{SD period})$
 - $\text{Reliability} = \text{Up period} / (\text{Up period} + \text{Down period})$
 - Up period - OK or WARNING when no SD
 - Down period - CRITICAL when no SD
 - SD period – scheduled downtime with severity outage
- A/R calculation is implemented in WLCG-MON (from where SAM3 UI takes data)
 - works at site/service level
 - needs a site/service SD metric

Validation procedure

SUM and SAM3 offer the same interface and processing the same messages.

Comparison of monitoring data for different services:

- Done for ALICE, CMS, ATLAS and LHCb (SRMv2, OSG-SRMv2 and CREAM-CE); results can be obtained for the periods of time (for example, one week) specified at run of the validation procedure which is realized as a number of shell scripts and C++ program
- Data are considered not coinciding if the difference is more 4%
- Investigation of the results of comparison

Results of comparison

The reasons for the differences found:

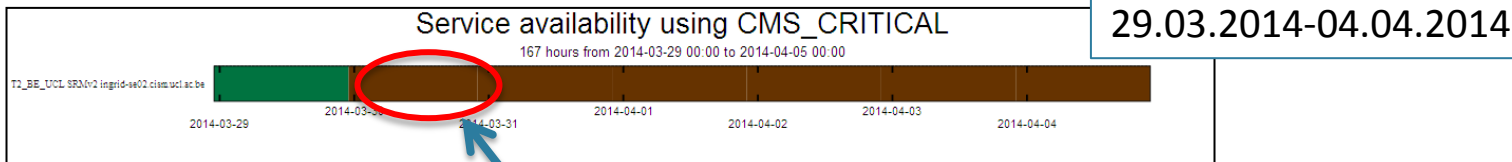
- ❑ Downtime - new system calculates A/R numbers correctly – in a case of SD, SUM doesn't return A/R
- ❑ Different metric validity on both systems (2h in SAM3, 24h in SUM) - in SUM we had CRITICAL status for 5-6 hours, until a OK test arrived, in SAM3 we have 2 hours of CRITICAL status, then 3-4 hours of no results - this led to different A/R numbers
- ❑ In SAM3 UNKNOWN status invalidated CRITICAL status, while in the old system, CRITICAL is the heaviest when AND operation is performed – **now it is fixed by Ivan**
- ❑ Also it was observed that SAM3 doesn't handle SRM services that belong to more than one site – **now it is fixed by Ivan**

Overview of comparison for one week (26.03-02.04)

			Availability			Reliability
Name of service	Number of services	Number of records for comparison	Total number of differences	Due to downtime	Due to different validity	Total number of differences
CMS SRMv2	111	777	35 (4.5%)	24	11	17 (2.2%)
ATLAS SRMv2	109	763	26 (3.4%)	18	8	13 (1.7%)
ATLAS OSG-SRMv2	14	98	8 (8%)	2	6	3 (3%)
LHCb SRMv2	7	49	-	-	-	-
CMS CREAM-CE	154	1078	217 (20%)	34	173	200 (19%)

GOCDDB: ingrid-se02.cism.ucl.ac.be: downtime from 30-Mar-14 20:00:00 to 04-Apr-14

30.03.2014:
Availability = **-2**
(maintenance)

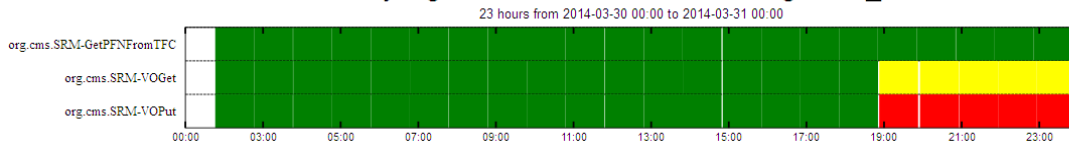


SUM

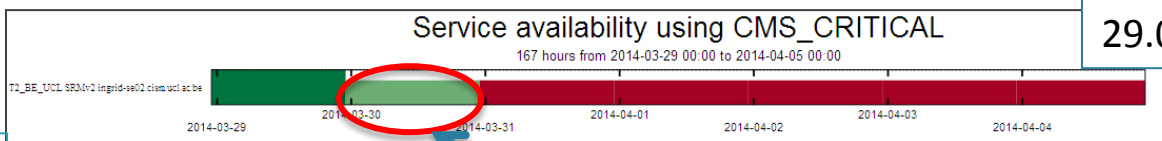
30.03.2014



Test history ingrid-se02.cism.ucl.ac.be using CMS_CRITICAL

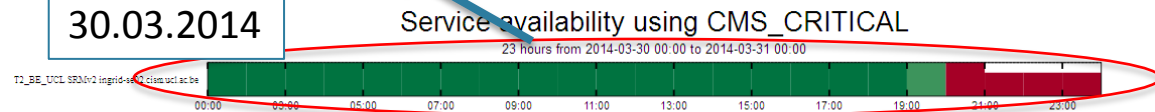


29.03.2014-04.04.2014

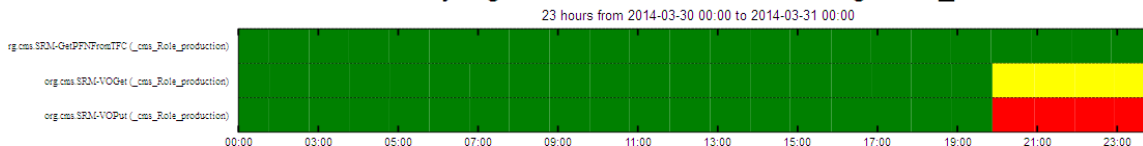


30.03.2014:
Availability = **0.79**

30.03.2014



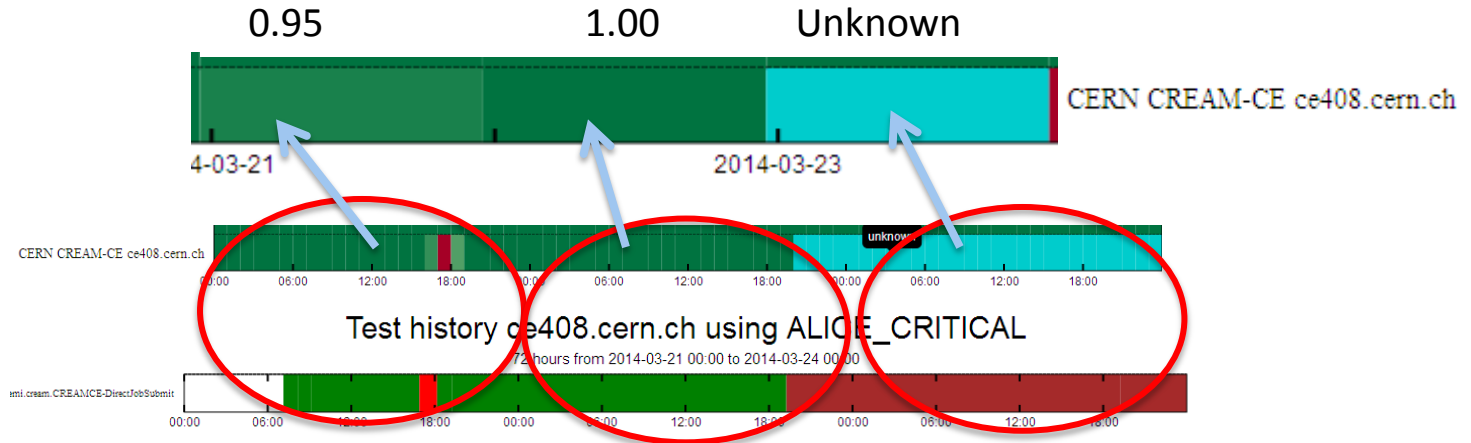
Test history ingrid-se02.cism.ucl.ac.be using CMS_CRITICAL



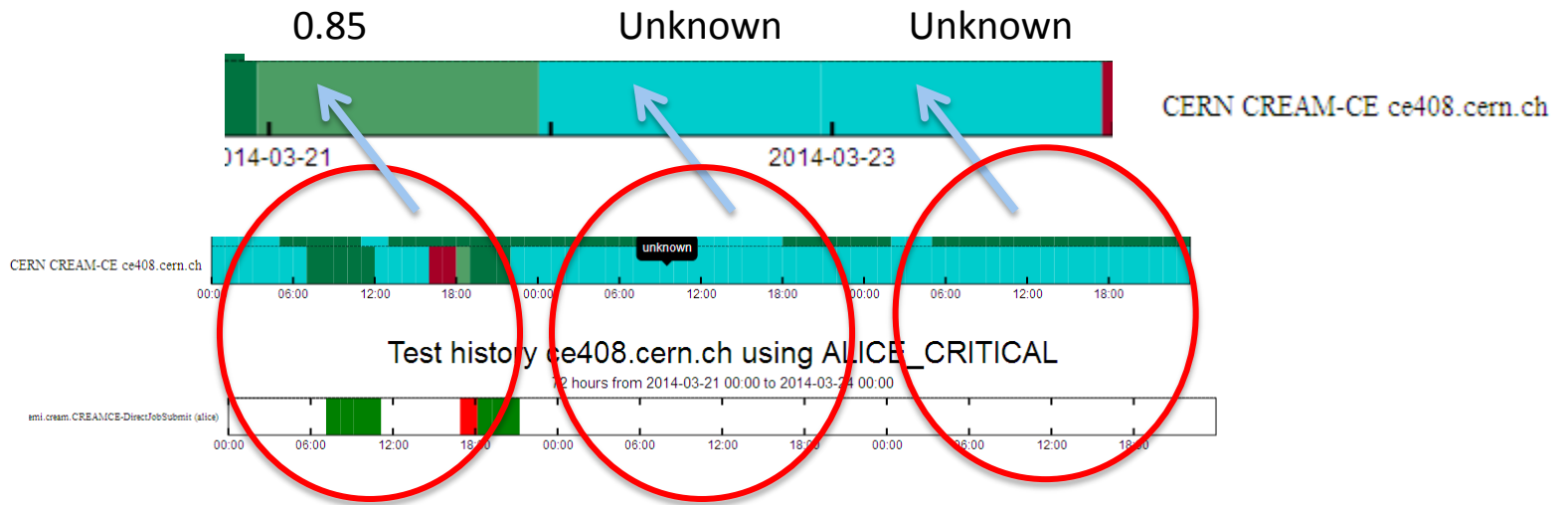
SAM3

“Validity” example (ALICE): CREAM-CE service availability: CERN ce408.cern.ch
 21.03.2014 - 23.03.2014

SUM



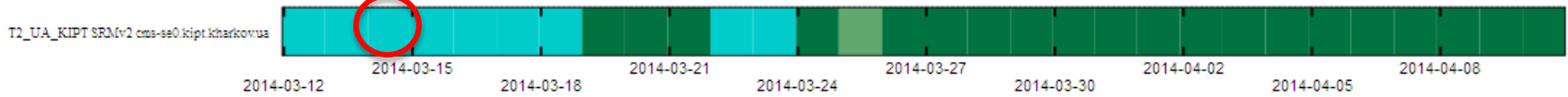
SAM3



SUM

Service reliability using CMS_CRITICAL_FULL

719 hours from 2014-03-12 00:00 to 2014-04-11 00:00



GOCDDB:

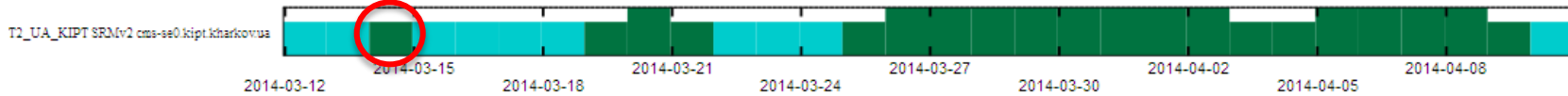
cms-se0.kipt.kharkov.ua : **downtime**
 11-Mar-14 18:01:00 14-Mar-14 18:00:00
 14-Mar-14 18:01:00 19-Mar-14 07:45:34
 only 1 minute "OK"!

Reliability = Up period / (Up period + Down period)
 Up period - OK or WARNING when no SD
 Down period - CRITICAL when no SD

SAM3

Service reliability using CMS_CRITICAL

719 hours from 2014-03-12 00:00 to 2014-04-11 00:00



TO DO

- Compare Site A/R
 - To complement the comparison of data for the CREAM-CE CMS services by information on what percentage of time for each day there was information about the state of the service, i.e. summarize for each day SUM time for “Critical”, “OK” and “Warning” states and divide it by the length of a day.
 - 2 weeks
-
- Decouple tests from SUM
 - Add SUM group filtering to SAM3

Conclusions

- **3 issues solved!:**

- 1) UNKNOWN heavier than CRITICAL when AND operation
- 2) services that belong to more than one site
- 3) calculation of Flavour Availability (ex. CREAM-CE * & SRMv2)

now 2 reasons for difference:

- **downtime** but SAM3 calculates A/R numbers correctly while downtime
- **other** differences – only those caused by different metric validity